

77/185

ORF d'après Cole et al. (Nature 393:537-544) et contenant Rv3576

```

1/1                                31/11
taa gct tgt cgc aca tgg tgc cgg cag gga gga aca gtg ggc aag cag cta gcc gcg ctc
OCH ala cys arg thr trp cys arg gln gly gly thr val gly lys gln leu ala ala leu
61/21                                91/31
gcc gcg ctg gtc ggt gcg tgc atg ctc gca gcc gga tgc acc aac gtg gtc gac ggg acc
ala ala leu val gly ala cys met leu ala ala gly cys thr asn val val asp gly thr
121/41                                151/51
gcc gtg gct gcc gac aaa tcc gga cca ctg cat cag gat ccg ata ccg gtt tca gcg ctt
ala val ala ala asp lys ser gly pro leu his gln asp pro ile pro val ser ala leu
181/61                                211/71
gaa ggg ctg ctt ctc gac ttg agc cag atc aat gcc gcg ctg ggt gcg aca tcg atg aag
glu gly leu leu leu asp leu ser gln ile asn ala ala leu gly ala thr ser met lys
241/81                                271/91
gtg tgg ttc aac gcc aag gca atg tgg gac tgg agc aag agc gtg gcc gac aag aat tgc
val trp phe asn ala lys ala met trp asp trp ser lys ser val ala asp lys asn cys
301/101                                331/111
ctg gct atc gac ggt cca gca cag gaa aag gtc tat gcc ggc acc ggg tgg acc gct atg
leu ala ile asp gly pro ala gln glu lys val tyr ala gly thr gly trp thr ala met
361/121                                391/131
cgc ggc caa cgg ctg gat gac agc atc gat gac tcc aag aaa cgc gac cac tac gcc att
arg gly gln arg leu asp asp ser ile asp asp ser lys lys arg asp his tyr ala ile
421/141                                451/151
caa gcg gtc gtc ggc ttc ccg acc gca cat gat gcc gag gag ttc tac agc tcc tcg gtg
gln ala val val gly phe pro thr ala his asp ala glu glu phe tyr ser ser ser val
481/161                                511/171
caa agc tgg agc agc tgc tcg aac cgc cgg ttt gtc gaa gtc acc ccc gga cag gac gac
gln ser trp ser ser cys ser asn arg arg phe val glu val thr pro gly gln asp asp
541/181                                571/191
gcc gcc tgg act gtg gct gac gtt gtc aac gac aac ggc atg ctc agt agc tcg cag gtt
ala ala trp thr val ala asp val val asn asp asn gly met leu ser ser ser gln val
601/201                                631/211
cag gaa ggc ggc gac gga tgg acc tgc cag cgt gcc ctg act gcg cgc aac aac gtc act
gln glu gly gly asp gly trp thr cys gln arg ala leu thr ala arg asn asn val thr
661/221                                691/231
atc gac att gtc acg tgc gcc tat agc caa ccg gat ttg gtg gcg att ggc atc gct aac
ile asp ile val thr cys ala tyr ser gln pro asp leu val ala ile gly ile ala asn
721/241
caa atc gcg gcc aag gtt gct aag cag tag
gln ile ala ala lys val ala lys gln AMB

```

SEQ ID N° 20F

FIGURE 20F

78/185

1/1
 GTC CTG GTC GCC GCG CAA CTG GCC GGT CCC 31/11
 val leu val ala ala gln leu ala gly pro asp gly lys cys ser arg ser arg phe cys
 61/21
 CGC TGG TAG TGG CGA TGG TGT TAG CAG GAT TGC GGG TCG AGG CTG CGA TGG CCA GCA CCA
 arg trp AMB trp arg trp cys AMB gln asp cys gly ser arg leu arg trp pro ala pro
 121/41
 GCG GCC TGC GGC TGG TCG CCG GCG GCG CCG AAA TGA TAC CCG CGA TCA CGA AAT ACA TGT
 ala ala cys gly trp ser pro arg ala pro lys OPA tyr pro arg ser arg asn thr cys
 181/61
 CGG CGC TGG ACG TCG CCG TGC TGG CCA GCT CGA CCG GAC ACG ATG TGG AGG GGG CGC AGA
 arg arg trp thr ser pro cys trp pro ala arg pro asp thr met trp arg gly arg arg
 241/81
 AAA ACT TCA CCG CCC GCA AGT ACG AGC TGC AGA CGC GAC TGG CCG ACA CCG ACG TCA TCG
 lys thr ser pro pro ala ser thr ser cys arg arg asp trp pro thr pro thr ser ser
 301/101
 CAG ACG TGC GGT CGG GAG TGA ACA CGC TGC TCA ACG GCG GTC AGG CGC TGC TGG ATA AGA
 gln thr cys gly arg glu OPA thr arg cys ser thr ala val arg arg cys trp ile arg
 361/121
 TGC TGG CCG ACA GCA TCG GCT TGC GGG ATC
 cys trp pro thr ala ser ala cys gly ile

SEQ ID N° 21A

FIGURE 21A

32/11
 TCC TGG TCG CCG CGC AAC TGG CCG GTC CCG ATG GAA AGT GTT CAC GAT CGC GCT TCT GCC
 ser trp ser pro arg asn trp pro val pro met glu ser val his asp arg ala ser ala
 62/21
 GCT GGT AGT GGC GAT GGT GTT AGC AGG ATT GCG GGT CGA GGC TGC GAT GGC CAG CAC CAG
 ala gly ser gly asp gly val ser arg ile ala gly arg gly cys asp gly gln his gln
 122/41
 CGG CCT GCG GCT GGT CGC CGC GCG CGC CGA AAT GAT ACC CGC GAT CAC GAA ATA CAT GTC
 arg pro ala ala gly arg arg ala arg arg asn asp thr arg asp his glu ile his val
 182/61
 GGC GCT GGA CGT CGC CGT GCT GGC CAG CTC GAC CGG ACA CGA TGT GGA GGG GGC GCA GAA
 gly ala gly arg arg arg ala gly gln leu asp arg thr arg cys gly gly gly ala glu
 242/81
 AAA CTT CAC CGC CCG CAA GTA CGA GCT GCA GAC CCG ACT GGC CGA CAC CGA CGT CAT CGC
 lys leu his arg pro gln val arg ala ala asp ala thr gly arg his arg arg his arg
 302/101
 AGA CGT GCG GTC GGG AGT GAA CAC GCT GCT CAA CGG CGG TCA GGC GCT GCT GGA TAA GAT
 arg arg ala val gly ser glu his ala ala gln arg arg ser gly ala ala gly OCH asp
 362/121
 GCT GGC CGA CAG CAT CGG CTT GCG GGA TC
 ala gly arg gln his arg leu ala gly

SEQ ID N° 21B

FIGURE 21B

79/185

33/11
 CCT GGT CGC CGC GCA ACT GGC CGG TCC CGA TGG AAA GTG TTC ACG ATC GCG CTT CTG CCG
 pro gly arg arg ala thr gly arg ser arg trp lys val phe thr ile ala leu leu pro
 63/21
 CTG GTA GTG GCG ATG GTG TTA GCA GGA TTG CGG GTC GAG GCT GCG ATG GCC AGC ACC AGC
 leu val val ala met val leu ala gly leu arg val glu ala ala met ala ser thr ser
 123/41
 GGC CTG CGG CTG GTC GCC GCG CGC GCC GAA ATG ATA CCC GCG ATC ACG AAA TAC ATG TCG
 gly leu arg leu val ala ala arg ala glu met ile pro ala ile thr lys tyr met ser
 183/61
 GCG CTG GAC GTC GCC GTG CTG GCC AGC TCG ACC GGA CAC GAT GTG GAG GGG GCG CAG AAA
 ala leu asp val ala val leu ala ser ser thr gly his asp val glu gly ala gln lys
 243/81
 AAC TTC ACC GCC CGC AAG TAC GAG CTG CAG ACG CGA CTG GCC GAC ACC GAC GTC ATC GCA
 asn phe thr ala arg lys tyr glu leu gln thr arg leu ala asp thr asp val ile ala
 303/101
 GAC GTG CGG TCG GGA GTG AAC ACG CTG CTC AAC GGC GGT CAG GCG CTG CTG GAT AAG ATG
 asp val arg ser gly val asn thr leu leu asn gly gly gln ala leu leu asp lys met
 363/121
 CTG GCC GAC AGC ATC GGC TTG CGG GAT C
 leu ala asp ser ile gly leu arg asp

SEQ ID N° 21C

FIGURE 21C

partie de la séquence nucléotidique de seq21A

1/1 31/11
 ACG ATC GCG CTT CTG CCG CTG GTA GTG GCG ATG GTG TTA GCA GGA TTG CGG GTC GAG GCT
 thr ile ala leu leu pro leu val val ala met val leu ala gly leu arg val glu ala
 61/21
 GCG ATG GCC AGC ACC AGC GGC CTG CGG CTG GTC GCC GCG CGC GCC GAA ATG ATA CCC GCG
 ala met ala ser thr ser gly leu arg leu val ala ala arg ala glu met ile pro ala
 121/41
 ATC ACG AAA TAC ATG TCG GCG CTG GAC GTC GCC GTG CTG GCC AGC TCG ACC GGA CAC GAT
 ile thr lys tyr met ser ala leu asp val ala val leu ala ser ser thr gly his asp
 181/61
 GTG GAG GGG GCG CAG AAA AAC TTC ACC GCC CGC AAG TAC GAG CTG CAG ACG CGA CTG GCC
 val glu gly ala gln lys asn phe thr ala arg lys tyr glu leu gln thr arg leu ala
 241/81
 GAC ACC GAC GTC ATC GCA GAC GTG CGG TCG GGA GTG AAC ACG CTG CTC AAC GGC GGT CAG
 asp thr asp val ile ala asp val arg ser gly val asn thr leu leu asn gly gly gln
 301/101
 GCG CTG CTG GAT AAG ATG CTG GCC GAC AGC ATC GGC TTG CGG GAT C
 ala leu leu asp lys met leu ala asp ser ile gly leu arg asp

SEQ ID N° 21A'

FIGURE 21A'

80/185

1/1 31/11
 CGA TCG CGC TTC TGC CGC TGG TAG TGG CGA TGG TGT TAG CAG GAT TGC GGG TCG AGG CTG
 arg ser arg phe cys arg trp AMB trp arg trp cys AMB gln asp cys gly ser arg leu
 61/21 91/31
 CGA TGG CCA GCA CCA GCG GCC TGC GGC TGG TCG CCG CGC GCG CCG AAA TGA TAC CCG CGA
 arg trp pro ala pro ala ala cys gly trp ser pro arg ala pro lys OPA tyr pro arg
 121/41 151/51
 TCA CGA AAT ACA TGT CGG CGC TGG ACG TCG CCG TGC TGG CCA GCT CGA CCG GAC ACG ATG
 ser arg asn thr cys arg arg trp thr ser pro cys trp pro ala arg pro asp thr met
 181/61 211/71
 TGG AGG GGG CGC AGA AAA ACT TCA CCG CCC GCA AGT ACG AGC TGC AGA CGC GAC TGG CCG
 trp arg gly arg arg lys thr ser pro pro ala ser thr ser cys arg arg asp trp pro
 241/81 271/91
 ACA CCG ACG TCA TCG CAG ACG TGC GGT CGG GAG TGA ACA CGC TGC TCA ACG GCG GTC AGG
 thr pro thr ser ser gln thr cys gly arg glu OPA thr arg cys ser thr ala val arg
 301/101 331/111
 CGC TGC TGG ATA AGA TGC TGG CCG ACA GCA TCG GCT TGC GGG ATC
 arg cys trp ile arg cys trp pro thr ala ser ala cys gly ile

SEQ ID N° 21B'

FIGURE 21B'

1/1 31/11
 CAC GAT CGC GCT TCT GCC GCT GGT AGT GGC GAT GGT GTT AGC AGG ATT GCG GGT CGA GGC
 his asp arg ala ser ala ala gly ser gly asp gly val ser arg ile ala gly arg gly
 61/21 91/31
 TGC GAT GGC CAG CAC CAG CGG CCT GCG GCT GGT CGC CGC GCG CGC CGA AAT GAT ACC CGC
 cys asp gly gln his gln arg pro ala ala gly arg arg ala arg arg asn asp thr arg
 121/41 151/51
 GAT CAC GAA ATA CAT GTC GGC GCT GGA CGT CGC CGT GCT GGC CAG CTC GAC CGG ACA CGA
 asp his glu ile his val gly ala gly arg arg arg ala gly gln leu asp arg thr arg
 181/61 211/71
 TGT GGA GGG GGC GCA GAA AAA CTT CAC CGC CCG CAA GTA CGA GCT GCA GAC GCG ACT GGC
 cys gly gly gly ala glu lys leu his arg pro gln val arg ala ala asp ala thr gly
 241/81 271/91
 CGA CAC CGA CGT CAT CGC AGA CGT GCG GTC GGG AGT GAA CAC GCT GCT CAA CGG CGG TCA
 arg his arg arg his arg arg arg ala val gly ser glu his ala ala gln arg arg ser
 301/101 331/111
 GGC GCT GCT GGA TAA GAT GCT GGC CGA CAG CAT CGG CTT GCG GGA TC
 gly ala ala gly OCH asp ala gly arg gln his arg leu ala gly

SEQ ID N° 21C'

FIGURE 21C'

81/185

séquence Rv3365c prédite par Cole et al. (Nature 393:537-544) et contenant Seq21A'

1/1	31/11
gtg acc atg ttc gcc cgc ccg acc atc ccg	gtc gcg gcg gcc gct tct gat att tcc gcc
val thr met phe ala arg pro thr ile pro	val ala ala ala ala ser asp ile ser ala
61/21	91/31
ccg gct caa ccg gcc cgc ggc aaa cct cag	caa cgc ccg ccg tcc tgg tcc ccg cgc aac
pro ala gln pro ala arg gly lys pro gln	gln arg pro pro ser trp ser pro arg asn
121/41	151/51
tgg ccg gtc cga tgg aaa gtg ttc acg atc	gcg ctt ctg ccg ctg gta gtg gcg atg gtg
trp pro val arg trp lys val phe thr ile	ala leu leu pro leu val val ala met val
181/61	211/71
tta gca gga ttg ccg gtc gag gct gcg atg	gcc agc acc agc ggc ctg ccg ctg gtc gcc
leu ala gly leu arg val glu ala ala met	ala ser thr ser gly leu arg leu val ala
241/81	271/91
gcg cgc gcc gaa atg ata ccc gcg atc acg	aaa tac atg tcc gcg ctg gac gtc gcc gtg
ala arg ala glu met ile pro ala ile thr	lys tyr met ser ala leu asp val ala val
301/101	331/111
ctg gcc agc tcc acc gga cac gat gtg gag	ggg gcg cag aaa aac ttc acc gcc cgc aag
leu ala ser ser thr gly his asp val glu	gly ala gln lys asn phe thr ala arg lys
361/121	391/131
tac gag ctg cag acg cga ctg gcc gac acc	gac gtc atc gca gac gtg ccg tcc gga gtg
tyr glu leu gln thr arg leu ala asp thr	asp val ile ala asp val arg ser gly val
421/141	451/151
aac acg ctg ctc aac ggc ggt cag gcg ctg	ctg gat aag gtg ctg gcc gac agc atc ggc
asn thr leu leu asn gly gly gln ala leu	leu asp lys val leu ala asp ser ile gly
481/161	511/171
ttg ccg gat ccg gtc acc gcc tac gcg ccg	ctg ctg ttg acg gcc cag aac gtg att gac
leu arg asp arg val thr ala tyr ala pro	leu leu leu thr ala gln asn val ile asp
541/181	571/191
gcg tcc gtg ccg gtt gac agc gag caa atc	cga acc cag gtg cag ggt ttg agc cga gcc
ala ser val arg val asp ser glu gln ile	arg thr gln val gln gly leu ser arg ala
601/201	631/211
gtt ggc gcc cgc ggg cag atg acg atg cag	gag atc ctg gtg act cgc ggc gcc gac ctt
val gly ala arg gly gln met thr met gln	glu ile leu val thr arg gly ala asp leu
661/221	691/231
gcc gag ccg caa ctg cgc agc gcg atg gtt	acc ctg gcc ggc acc gaa ccc tcc acg ctg
ala glu pro gln leu arg ser ala met val	thr leu ala gly thr glu pro ser thr leu
721/241	751/251
ttc ggg atg agc gcg gcg ctc ggt gca ggc	tcc ccg gac acc aag aac ctg cag cag caa
phe gly met ser ala ala leu gly ala gly	ser pro asp thr lys asn leu gln gln gln
781/261	811/271
atg gtg acc agg atg gcg atc atg tcc gat	ccg gcc gtt gca ctg gtc aac aac cca gag
met val thr arg met ala ile met ser asp	pro ala val ala leu val asn asn pro glu
841/281	871/291
ctg ctg cac tcc ata cag atc acc cgc gac	att gcc gag cag gtg atc acc gac acc acc
leu leu his ser ile gln ile thr arg asp	ile ala glu gln val ile thr asp thr thr
901/301	931/311
gag gcg gtg acg aag tcc gtg caa agc cag	gcc acc gac ccg ccg gat gcc gcg att cgc
glu ala val thr lys ser val gln ser gln	ala thr asp arg arg asp ala ala ile arg
961/321	991/331
gac gcc gtg ctg gtg ttg gcc gcc atc gcg	acc gcg atc gtc gtc gtg ttg gtg gtg gcg
asp ala val leu val leu ala ala ile ala	thr ala ile val val val leu val val ala

SEQ ID N° 21F

FIGURE 21D
FEUILLE DE REMPLACEMENT (REGLE 26)

82/185

1021/341	1051/351
cgc acg ctg gtc ggg ccg atg cgg gta ctg	cgt gat ggg gcg ctc aag gtt gct cat acc
arg thr leu val gly pro met arg val leu	arg asp gly ala leu lys val ala his thr
1081/361	1111/371
gat ctc gac gcc gag atc gcg gcg gtc cgc	gcc gcc gac gag ccg atc ccc gag cca ctg
asp leu asp gly glu ile ala ala val arg	ala gly asp glu pro ile pro glu pro leu
1141/381	1171/391
gcg gtg tac acc acc gag gaa atc ggt cag	gtc gcg cat gcg gtc gac gag ctg cac acc
ala val tyr thr thr glu glu ile gly gln	val ala his ala val asp glu leu his thr
1201/401	1231/411
cgg gcc ctg ttg ctg gcc gcc gag gaa acg	cgg ttg cga ctg ctg gtc aac gag atg ttt
arg ala leu leu leu ala gly glu glu thr	arg leu arg leu leu val asn glu met phe
1261/421	1291/431
gag acc atg tcg cgg cgt agc cgt tcc ctg	gtc gac cag cag ctg tcg gtc atc gac caa
glu thr met ser arg arg ser arg ser leu	val asp gln gln leu ser val ile asp gln
1321/441	1351/451
ctg gag cgc aac gag gag gat ccc gcc cga	ctc gac agc ctt ttc cgg ctc gat cac ctg
leu glu arg asn glu glu asp pro ala arg	leu asp ser leu phe arg leu asp his leu
1381/461	1411/471
gcc gcc cgg ctg cgc cgc aac agc gcc aac	ctg ctg gtg ctg gcc ggt gcg cag att acc
ala ala arg leu arg arg asn ser ala asn	leu leu val leu ala gly ala gln ile thr
1441/481	1471/491
cgt gac cac cgc gag ccg gtg ccg ctg tca	acc gtg atc agc gcc gcc gtg tca gag gtc
arg asp his arg glu pro val pro leu ser	thr val ile ser ala ala val ser glu val
1501/501	1531/511
gag gac tat cgc cgc gtc gac atc gcg agg	gta ccc gac tgt gcg gta gtc gcc gca gcg
glu asp tyr arg arg val asp ile ala arg	val pro asp cys ala val val gly ala ala
1561/521	1591/531
gct ggt gcc gtc att cat ctg ctt gcc gag	ctg atc gac aac gcg ttg cgc tac tcg tca
ala gly gly val ile his leu leu ala glu	leu ile asp asn ala leu arg tyr ser ser
1621/541	1651/551
ccg acc aca ccc gtt cgg gtt gcc gcc gca	atc gcc agc gaa gcc agt gtt ctg ctg cga
pro thr thr pro val arg val ala ala ala	ile gly ser glu gly ser val leu leu arg
1681/561	1711/571
atc tcg gat tcc gcc ctg gcc atg acc gat	gcc gat cgg cgg atg gcc aat atg cgg ctg
ile ser asp ser gly leu gly met thr asp	ala asp arg arg met ala asn met arg leu
1741/581	1771/591
cgg gcc gcc ggt gag gtc acc ccg gat agt	gcc cgg cac atg ggt ctg ttc gta gtc gcc
arg ala gly gly glu val thr pro asp ser	ala arg his met gly leu phe val val gly
1801/601	1831/611
cgg ctg gcc ggt cgg cac gcc atc cga gtc	ggg ctg cgc ggt ccg gtg acc ggt gaa cag
arg leu ala gly arg his gly ile arg val	gly leu arg gly pro val thr gly glu gln
1861/621	1891/631
gcc acc gcc acc acc gcc gag gtc tac ctg	ccg cta gcc gtg ctc gag ggg acg gcc cca
gly thr gly thr thr ala glu val tyr leu	pro leu ala val leu glu gly thr ala pro
1921/641	1951/651
gcg cag ccg cca aag ccg cgg gta ttt gcg	atc aag ccg ccg tgt cct gaa ccc gcg gcg
ala gln pro pro lys pro arg val phe ala	ile lys pro pro cys pro glu pro ala ala
1981/661	2011/671
gcc gat ccg acg gac gtt ccc gcc gcc atc	ggg ccg cta cca ccg gtc acg ttg ctc ccg
ala asp pro thr asp val pro ala ala ile	gly pro leu pro pro val thr leu leu pro

SEQ ID N° 21D (suite 1)

FIGURE 21D (suite 1)

FEUILLE DE REMPLACEMENT (REGLE 26)

83/185

2041/681	2071/691
cgc cgt acc ccg ggg tcc agt ggc atc gcc	gac gtc ccg gcc cag ccg atg cag cag ccg
arg arg thr pro gly ser ser gly ile ala	asp val pro ala gln pro met gln gln arg
2101/701	2131/711
cgg cgc gag ctg aaa aca ccc tgg tgg gag	gat agg ttt caa cag gag ccc aaa caa ccg
arg arg glu leu lys thr pro trp trp glu	asp arg phe gln gln glu pro lys gln pro
2161/721	2191/731
ccc gca cca gaa ccg cga ccg gcg ccg ccg	ccc gcc aaa ccc gcg cca ccg gcg ggc ccg
pro ala pro glu pro arg pro ala pro pro	pro ala lys pro ala pro pro ala gly pro
2221/741	2251/751
gtt gat gac gac gtc atc tac cgg cgg atg	ctc tcc gag atg gtg ggt gac ccg cac gag
val asp asp asp val ile tyr arg arg met	leu ser glu met val gly asp pro his glu
2281/761	2311/771
ctg gcc cac agc ccc gat ctg gac tgg aag	tcg gtg tgg gac cac ggc tgg tcg gcg gcc
leu ala his ser pro asp leu asp trp lys	ser val trp asp his gly trp ser ala ala
2341/781	2371/791
gcc gag gcc gcg gac aag ccc gtg cag tcc	cgc acg gac tac ggc ctg ccg gtg cgc gaa
ala glu ala ala asp lys pro val gln ser	arg thr asp tyr gly leu pro val arg glu
2401/801	2431/811
ccc ggg gcc ccg tta gtg ccg ggg gcg gcg	gtg cct gag gga ccc gat ccg gag cat ccg
pro gly ala arg leu val pro gly ala ala	val pro glu gly pro asp arg glu his pro
2461/821	2491/831
ggg gca gcg cta gca tcc aac ggc gga ctt	cat ccc ggc cga gcg ccg ccg cac gcg gct
gly ala ala leu ala ser asn gly gly leu	his pro gly arg ala pro arg his ala ala
2521/841	2551/851
gcg gta cgc gac ccc gac gcg gtt cgt gcc	tcc atc agc agc cat ttc ggc ggc gtg cgc
ala val arg asp pro asp ala val arg ala	ser ile ser ser his phe gly gly val arg
2581/861	2611/871
acc ggg ccg tcg cat gcc cgc gag agc agt	cag gga ccc aat cag caa tga
thr gly arg ser his ala arg glu ser ser	gln gly pro asn gln gln OPA

SEQ ID N° 21D (suite)

FIGURE 21D (suite)

84/185

ORF d'après par Cole et al. (Nature 393:537-544) et contenant Rv3365c

```

1/1                                31/11
taa ggg tgc ggc cgg tgg cac ggc cgc ggc cac gtg acc atg ttc gcc cgc ccg acc atc
OCH gly cys gly arg trp his gly arg gly his val thr met phe ala arg pro thr ile
61/21                                91/31
ccg gtc gcg gcg gcc gct tct gat att tcc gcc ccg gct caa ccg gcc cgc ggc aaa cct
pro val ala ala ala ala ser asp ile ser ala pro ala gln pro ala arg gly lys pro
121/41                               151/51
cag caa cgc ccg ccg tcc tgg tcg ccg cgc aac tgg ccg gtc cga tgg aaa gtg ttc acg
gln gln arg pro pro ser trp ser pro arg asn trp pro val arg trp lys val phe thr
181/61                               211/71
atc gcg ctt ctg ccg ctg gta gtg gcg atg gtg tta gca gga ttg ccg gtc gag gct gcg
ile ala leu leu pro leu val val ala met val leu ala gly leu arg val glu ala ala
241/81                               271/91
atg gcc agc acc agc ggc ctg cgg ctg gtc gcc gcg cgc gcc gaa atg ata ccc gcg atc
met ala ser thr ser gly leu arg leu val ala ala arg ala glu met ile pro ala ile
301/101                             331/111
acg aaa tac atg tcg gcg ctg gac gtc gcc gtg ctg gcc agc tcg acc gga cac gat gtg
thr lys tyr met ser ala leu asp val ala val leu ala ser ser thr gly his asp val
361/121                             391/131
gag ggg gcg cag aaa aac ttc acc gcc cgc aag tac gag ctg cag acg cga ctg gcc gac
glu gly ala gln lys asn phe thr ala arg lys tyr glu leu gln thr arg leu ala asp
421/141                             451/151
acc gac gtc atc gca gac gtg cgg tcg gga gtg aac acg ctg ctc aac ggc ggt cag gcg
thr asp val ile ala asp val arg ser gly val asn thr leu leu asn gly gly gln ala
481/161                             511/171
ctg ctg gat aag gtg ctg gcc gac agc atc ggc ttg ccg gat ccg gtc acc gcc tac gcg
leu leu asp lys val leu ala asp ser ile gly leu arg asp arg val thr ala tyr ala
541/181                             571/191
ccg ctg ctg ttg acg gcc cag aac gtg att gac gcg tcg gtg ccg gtt gac agc gag caa
pro leu leu leu thr ala gln asn val ile asp ala ser val arg val asp ser glu gln
601/201                             631/211
atc cga acc cag gtg cag ggt ttg agc cga gcc gtt ggc gcc cgc ggg cag atg acg atg
ile arg thr gln val gln gly leu ser arg ala val gly ala arg gly gln met thr met
661/221                             691/231
cag gag atc ctg gtg act cgc ggc gcc gac ctt gcc gag ccg caa ctg cgc agc gcg atg
gln glu ile leu val thr arg gly ala asp leu ala glu pro gln leu arg ser ala met
721/241                             751/251
gtt acc ctg gcc ggc acc gaa ccc tcg acg ctg ttc ggg atg agc gcg gcg ctc ggt gca
val thr leu ala gly thr glu pro ser thr leu phe gly met ser ala ala leu gly ala
781/261                             811/271
ggc tcg ccg gac acc aag aac ctg cag cag caa atg gtg acc agg atg gcg atc atg tcc
gly ser pro asp thr lys asn leu gln gln gln met val thr arg met ala ile met ser
841/281                             871/291
gat ccg gcc gtt gca ctg gtc aac aac cca gag ctg ctg cac tcg ata cag atc acc cgc
asp pro ala val ala leu val asn asn pro glu leu leu his ser ile gln ile thr arg

```

SEQ ID N° 21F

FIGURE 21F

FEUILLE DE REMPLACEMENT (REGLE 26)

85/185

901/301	931/311
gac att gcc gag cag gtg atc acc gac acc	acc gag gcg gtg acg aag tcg gtg caa agc
asp ile ala glu gln val ile thr asp thr	thr glu ala val thr lys ser val gln ser.
961/321	991/331
cag gcc acc gac cgg cgg gat gcc gcg att	cgc gac gcc gtg ctg gtg ttg gcc gcc atc
gln ala thr asp arg arg asp ala ala ile	arg asp ala val leu val leu ala ala ile
1021/341	1051/351
gcg acc gcg atc gtc gtc gtg ttg gtg gtg	gcg cgc acg ctg gtc ggg ccg atg cgg gta
ala thr ala ile val val val leu val val	ala arg thr leu val gly pro met arg val
1081/361	1111/371
ctg cgt gat ggg gcg ctc aag gtt gct cat	acc gat ctc gac ggc gag atc gcg gcg gtc
leu arg asp gly ala leu lys val ala his	thr asp leu asp gly glu ile ala ala val
1141/381	1171/391
cgc gcc ggc gac gag ccg atc ccc gag cca	ctg gcg gtg tac acc acc gag gaa atc ggt
arg ala gly asp glu pro ile pro glu pro	leu ala val tyr thr thr glu glu ile gly
1201/401	1231/411
cag gtc gcg cat gcg gtc gac gag ctg cac	acc cgg gcc ctg ttg ctg gcc ggc gag gaa
gln val ala his ala val asp glu leu his	thr arg ala leu leu leu ala gly glu glu
1261/421	1291/431
acg cgg ttg cga ctg ctg gtc aac gag atg	ttt gag acc atg tcg cgg cgt agc cgt tcc
thr arg leu arg leu leu val asn glu met	phe glu thr met ser arg arg ser arg ser
1321/441	1351/451
ctg gtc gac cag cag ctg tcg gtc atc gac	caa ctg gag cgc aac gag gag gat ccc gcc
leu val asp gln gln leu ser val ile asp	gln leu glu arg asn glu glu asp pro ala
1381/461	1411/471
cga ctc gac agc ctt ttc cgg ctc gat cac	ctg gcc gcc cgg ctg cgc cgc aac agc gcc
arg leu asp ser leu phe arg leu asp his	leu ala ala arg leu arg arg asn ser ala
1441/481	1471/491
aac ctg ctg gtg ctg gcc ggt gcg cag att	acc cgt gac cac cgc gag ccg gtg ccg ctg
asn leu leu val leu ala gly ala gln ile	thr arg asp his arg glu pro val pro leu
1501/501	1531/511
tca acc gtg atc agc gcc gcc gtg tca gag	gtc gag gac tat cgc cgc gtc gac atc gcg
ser thr val ile ser ala ala val ser glu	val glu asp tyr arg arg val asp ile ala
1561/521	1591/531
agg gta ccc gac tgt gcg gta gtc ggc gca	gcg gct ggt ggc gtc att cat ctg ctt gcc
arg val pro asp cys ala val val gly ala	ala ala gly gly val ile his leu leu ala
1621/541	1651/551
gag ctg atc gac aac gcg ttg cgc tac tcg	tca ccg acc aca ccc gtt cgg gtt gcc gcc
glu leu ile asp asn ala leu arg tyr ser	ser pro thr thr pro val arg val ala ala
1681/561	1711/571
gca atc ggc agc gaa ggc agt gtt ctg ctg	cga atc tcg gat tcc ggc ctg ggc atg acc
ala ile gly ser glu gly ser val leu leu	arg ile ser asp ser gly leu gly met thr
1741/581	1771/591
gat gcc gat cgg cgg atg gcc aat atg cgg	ctg cgg gcc ggc ggt gag gtc acc ccg gat
asp ala asp arg arg met ala asn met arg	leu arg ala gly gly glu val thr pro asp
1801/601	1831/611
agt gcc cgg cac atg ggt ctg ttc gta gtc	ggc cgg ctg gcc ggt cgg cac ggc atc cga
ser ala arg his met gly leu phe val val	gly arg leu ala gly arg his gly ile arg

SEQ ID N° 21F (suite 1)

FIGURE 21F (suite 1)

86/185

1861/621	1891/631
gtc ggg ctg cgc ggt ccg gtg acc ggt gaa	cag ggc acc ggc acc acc gcc gag gtc tac
val gly leu arg gly pro val thr gly glu	gln gly thr gly thr thr ala glu val tyr
1921/641	1951/651
ctg ccg cta gcc gtg ctc gag ggg acg gcc	cca gcg cag ccg cca aag ccg cgg gta ttt
leu pro leu ala val leu glu gly thr ala	pro ala gln pro pro lys pro arg val phe
1981/661	2011/671
gcg atc aag ccg ccg tgt cct gaa ccc gcg	gcg gcc gat ccg acg gac gtt ccc gcc gcc
ala ile lys pro pro cys pro glu pro ala	ala ala asp pro thr asp val pro ala ala
2041/681	2071/691
atc ggg ccg cta cca ccg gtc acg ttg ctc	ccg cgc cgt acc ccg ggg tcc agt ggc atc
ile gly pro leu pro pro val thr leu leu	pro arg arg thr pro gly ser ser gly ile
2101/701	2131/711
gcc gac gtc ccg gcc cag ccg atg cag cag	ccg ccg cgc gag ctg aaa aca ccc tgg tgg
ala asp val pro ala gln pro met gln gln	arg arg arg glu leu lys thr pro trp trp
2161/721	2191/731
gag gat agg ttt caa cag gag ccc aaa caa	ccg ccc gca cca gaa ccg cga ccg gcg ccg
glu asp arg phe gln gln glu pro lys gln	pro pro ala pro glu pro arg pro ala pro
2221/741	2251/751
ccg ccc gcc aaa ccc gcg cca ccg gcg ggc	ccg gtt gat gac gac gtc atc tac ccg ccg
pro pro ala lys pro ala pro pro ala gly	pro val asp asp asp val ile tyr arg arg
2281/761	2311/771
atg ctc tcc gag atg gtg ggt gac ccg cac	gag ctg gcc cac agc ccc gat ctg gac tgg
met leu ser glu met val gly asp pro his	glu leu ala his ser pro asp leu asp trp
2341/781	2371/791
aag tcg gtg tgg gac cac ggc tgg tcg gcg	gcc gcc gag gcc gcg gac aag ccc gtg cag
lys ser val trp asp his gly trp ser ala	ala ala glu ala ala asp lys pro val gln
2401/801	2431/811
tcc cgc acg gac tac ggc ctg ccg gtg cgc	gaa ccc ggg gcc ccg tta gtg ccg ggg gcg
ser arg thr asp tyr gly leu pro val arg	glu pro gly ala arg leu val pro gly ala
2461/821	2491/831
gcg gtg cct gag gga ccc gat ccg gag cat	ccg ggt gca gcg cta gca tcc aac ggc gga
ala val pro glu gly pro asp arg glu his	pro gly ala ala leu ala ser asn gly gly
2521/841	2551/851
ctt cat ccc ggc cga gcg ccg ccg cac gcg	gct gcg gta cgc gac ccc gac gcg gtt cgt
leu his pro gly arg ala pro arg his ala	ala ala val arg asp pro asp ala val arg
2581/861	2611/871
gcc tcc atc agc agc cat ttc ggc ggc gtg	cgc acc ggg ccg tcg cat gcc cgc gag agc
ala ser ile ser ser his phe gly gly val	arg thr gly arg ser his ala arg glu ser
2641/881	
agt cag gga ccc aat cag caa tga	
ser gln gly pro asn gln gln OPA	

SEQ ID N° 21F (suite 2)

FIGURE 21F (suite 2)

87/185

31/11

CTA CGA CAA GGC AAA GGA GCA CAG GGT GAA GCG TGG ACT GAC GGT CGC GGT AGC CGG AGC
 leu arg gln gly lys gly ala gln gly glu ala trp thr asp gly arg gly ser arg ser
 61/21 91/31
 CGC CAT TCT GGT CGC AGG TCT TTC CGG ATG TTC AAG CAA CAA GTC GAC TAC AGG AAG CGG
 arg his ser gly arg arg ser phe arg met phe lys gln gln val asp tyr arg lys arg
 121/41 151/51
 TGA GAC CAC GAC CGC GGC AGG CAC GAC GGC AAG CCC CGG CGC CGC ATC CGG GCC GAA GGT
 OPA asp his asp arg gly arg his asp gly lys pro arg arg arg ile arg ala glu gly
 181/61 211/71
 CGT CAT CGA CGG TAA GGA CCA GAA CGT CAC CGG GTC TGT GGT GTG CAC AAC CGC GGC CGG
 arg his arg arg OCH gly pro glu arg his arg val cys gly val his asn arg gly arg
 241/81 271/91
 CAA TGT CAA CAT CGC GAT CGG CGG GGC GGC GAC CGG CAT TGC CGC CGT GCT CAC CGA CGG
 gln cys gln his arg asp arg arg gly gly asp arg his cys arg arg ala his arg arg
 301/101 331/111
 CAA CCC TCC GGA GGT GAA GTC CGT TGG GCT CGG TAA CGT CAA CGG CGT CAC GCT GGG ATA
 gln pro ser gly gly glu val arg trp ala arg OCH arg gln arg arg his ala gly ile
 361/121 391/131
 CAC GTC GGC CAC CGG ACA GGG TAA CGC TCG GCA ACC AAG GAC GGC AGC CAC TAC AAG ATC
 his val gly his arg thr gly OCH arg ser ala thr lys asp gly ser his tyr lys ile

SEQ ID N° 22A

FIGURE 22A

32/11

TAC GAC AAG GCA AAG GAG CAC AGG GTG AAG CGT GGA CTG ACG GTC GCG GTA GCC GGA GCC
 tyr asp lys ala lys glu his arg val lys arg gly leu thr val ala val ala gly ala
 62/21 92/31
 GCC ATT CTG GTC GCA GGT CTT TCC GGA TGT TCA AGC AAC AAG TCG ACT ACA GGA AGC GGT
 ala ile leu val ala gly leu ser gly cys ser ser asn lys ser thr thr gly ser gly
 122/41 152/51
 GAG ACC ACG ACC GCG GCA GGC ACG ACG GCA AGC CCC GGC GCC GCA TCC GGG CCG AAG GTC
 glu thr thr thr ala ala gly thr thr ala ser pro gly ala ala ser gly pro lys val
 182/61 212/71
 GTC ATC GAC GGT AAG GAC CAG AAC GTC ACC GGG TCT GTG GTG TGC ACA ACC GCG GCC GGC
 val ile asp gly lys asp gln asn val thr gly ser val val cys thr thr ala ala gly
 242/81 272/91
 AAT GTC AAC ATC GCG ATC GGC GGG GCG GCG ACC GGC ATT GCC GCC GTG CTC ACC GAC GGC
 asn val asn ile ala ile gly gly ala ala thr gly ile ala ala val leu thr asp gly
 302/101 332/111
 AAC CCT CCG GAG GTG AAG TCC GTT GGG CTC GGT AAC GTC AAC GGC GTC ACG CTG GGA TAC
 asn pro pro glu val lys ser val gly leu gly asn val asn gly val thr leu gly tyr
 362/121 392/131
 ACG TCG GGC ACC GGA CAG GGT AAC GCT CGG CAA CCA AGG ACG GCA GCC ACT ACA AGA TC
 thr ser gly thr gly gln gly asn ala arg gln pro arg thr ala ala thr thr arg

SEQ ID N° 22B

FIGURE 22B

88/185

33/11

ACG ACA AGG CAA AGG AGC ACA GGG TGA AGC GTG GAC TGA CGG TCG CGG TAG CCG GAG CCG
thr thr arg gln arg ser thr gly OPA ser val asp OPA arg ser arg AMB pro glu pro
63/21 93/31

CCA TTC TGG TCG CAG GTC TTT CCG GAT GTT CAA GCA ACA AGT CGA CTA CAG GAA GCG GTG
pro phe trp ser gln val phe pro asp val gln ala thr ser arg leu gln glu ala val
123/41 153/51

AGA CCA CGA CCG CGG CAG GCA CGA CGG CAA GCC CCG GCG CCG CAT CCG GGC CGA AGG TCG
arg pro arg pro arg gln ala arg arg gln ala pro ala pro his pro gly arg arg ser
183/61 213/71

TCA TCG ACG GTA AGG ACC AGA ACG TCA CCG GGT CTG TGG TGT GCA CAA CCG CGG CCG GCA
ser ser thr val arg thr arg thr ser pro gly leu trp cys ala gln pro arg pro ala
243/81 273/91

ATG TCA ACA TCG CGA TCG GCG GGG CGG CGA CCG GCA TTG CCG CCG TGC TCA CCG ACG GCA
met ser thr ser arg ser ala gly arg arg pro ala leu pro pro cys ser pro thr ala
303/101 333/111

ACC CTC CGG AGG TGA AGT CCG TTG GGC TCG GTA ACG TCA ACG GCG TCA CGC TGG GAT ACA
thr leu arg arg OPA ser pro leu gly ser val thr ser thr ala ser arg trp asp thr
363/121 393/131

CGT CGG GCA CCG GAC AGG GTA ACG CTC GGC AAC CAA GGA CGG CAG CCA CTA CAA GAT C
arg arg ala pro asp arg val thr leu gly asn gln gly arg gln pro leu gln asp

SEQ ID N° 22C

FIGURE 22C

31/11

GCA CAA CCG CGG CCG GCA ATG TCA ACA TCG CGA TCG GCG GGG CGG CGA CCG GCA TTG CCG
ala gln pro arg pro ala met ser thr ser arg ser ala gly arg arg pro ala leu pro
61/21 91/31

CCG TGC TCA CCG ACG GCA ACC CTC CGG AGG TGA AGT CCG TTG GGC TCG GTA ACG TCA ACG
pro cys ser pro thr ala thr leu arg arg OPA ser pro leu gly ser val thr ser thr
121/41 151/51

GCG TCA CGC TGG GAT ACA CGT CGG GCA CCG GAC AGG GTA ACG CCT CGG CAA CCA AGG ACG
ala ser arg trp asp thr arg arg ala pro asp arg val thr pro arg gln pro arg thr
181/61 211/71

GCA GCC ACT ACA AGA TCA CAG GGT GAA GCG TGG ACT GAC GGT CGC GGT AGC CGG AGC CGC
ala ala thr thr arg ser gln gly glu ala trp thr asp gly arg gly ser arg ser arg
241/81 271/91

CAT TCT GGT CGC AGG TCT TTC CGG ATG TTC AAG CAA CAA GTC GAC TAC AGG AAG CGG TGA
his ser gly arg arg ser phe arg met phe lys gln gln val asp tyr arg lys arg OPA
301/101 331/111

GAC CAC GAC CGC GGC AGG CAC GAC GGC AAG CCC CGG CGC CGC TCC GGC CCG AAG GTC GTC
asp his asp arg gly arg his asp gly lys pro arg arg arg ser gly pro lys val val
361/121 391/131

ATC GAC GGT AAG GAC CAG AAC GTC ACC GGC TCC GTG GTG TGC ACA ACC GCG GCC GGC AAT
ile asp gly lys asp gln asn val thr gly ser val val cys thr thr ala ala gly asn
421/141 451/151

GTC AAC ATC GCG ATC GGC GGG GCG GCG ACC GGC ATT GCC GCC GTG CTC ACC GAC GGC AAC
val asn ile ala ile gly gly ala ala thr gly ile ala ala val leu thr asp gly asn
481/161 511/171

CCT CCG GAG GTG AAG TCC GTT GGG CTC GGT AAC GTC AAC GGC GTC ACG CTG GGA TAC ACG
pro pro glu val lys ser val gly leu gly asn val asn gly val thr leu gly tyr thr
541/181 571/191

TCG GGC ACC GGA CAG GGT AAC GCC TCG GCA ACC AAG GAC GGC AGC CAC TAC AAG ATC
ser gly thr gly gln gly asn ala ser ala thr lys asp gly ser his tyr lys ile

SEQ ID N° 23A

89/185

32/11
CAC AAC CGC GGC CGG CAA TGT CAA CAT CGC GAT CGG CGG GGC GGC GAC CGG CAT TGC CGC
his asn arg gly arg gln cys gln his arg asp arg arg gly gly asp arg his cys arg
62/21
CGT GCT CAC CGA CGG CAA CCC TCC GGA GGT GAA GTC CGT TGG GCT CGG TAA CGT CAA CGG
arg ala his arg arg gln pro ser gly gly glu val arg trp ala arg OCH arg gln arg
122/41
CGT CAC GCT GGG ATA CAC GTC GGG CAC CGG ACA GGG TAA CGC CTC GGC AAC CAA GGA CGG
arg his ala gly ile his val gly his arg thr gly OCH arg leu gly asn gln gly arg
182/61
CAG CCA CTA CAA GAT CAC AGG GTG AAG CGT GGA CTG ACG GTC GCG GTA GCC GGA GCC GCC
gln pro leu gln asp his arg val lys arg gly leu thr val ala val ala gly ala ala
242/81
ATT CTG GTC GCA GGT CTT TCC GGA TGT TCA AGC AAC AAG TCG ACT ACA GGA AGC GGT GAG
ile leu val ala gly leu ser gly cys ser ser asn lys ser thr thr gly ser gly glu
302/101
ACC ACG ACC GCG GCA GGC ACG ACG GCA AGC CCC GGC GCC GCT CCG GGC CGA AGG TCG TCA
thr thr thr ala ala gly thr thr ala ser pro gly ala ala pro gly arg arg ser ser
362/121
TCG ACG GTA AGG ACC AGA ACG TCA CCG GCT CCG TGG TGT GCA CAA CCG CGG CCG GCA ATG
ser thr val arg thr arg thr ser pro ala pro trp cys ala gln pro arg pro ala met
422/141
TCA ACA TCG CGA TCG GCG GGG CGG CGA CCG GCA TTG CCG CCG TGC TCA CCG ACG GCA ACC
ser thr ser arg ser ala gly arg arg pro ala leu pro pro cys ser pro thr ala thr
482/161
CTC CGG AGG TGA AGT CCG TTG GGC TCG GTA ACG TCA ACG GCG TCA CGC TGG GAT ACA CGT
leu arg arg OPA ser pro leu gly ser val thr ser thr ala ser arg trp asp thr arg
542/181
CGG GCA CCG GAC AGG GTA ACG CCT CGG CAA CCA AGG ACG GCA GCC ACT ACA AGA TC
arg ala pro asp arg val thr pro arg gln pro arg thr ala ala thr thr arg
572/191

SEQ ID N° 23B

FIGURE 23B

90/185

33/11

ACA ACC GCG GCC GGC AAT GTC AAC ATC GCG ATC GGC GGG GCG GCG ACC GGC ATT GCC GCC
 thr thr ala ala gly asn val asn ile ala ile gly gly ala ala thr gly ile ala ala
 63/21 93/31

GTG CTC ACC GAC GGC AAC CCT CCG GAG GTG AAG TCC GTT GGG CTC GGT AAC GTC AAC GGC
 val leu thr asp gly asn pro pro glu val lys ser val gly leu gly asn val asn gly
 123/41 153/51

GTC ACG CTG GGA TAC ACG TCG GGC ACC GGA CAG GGT AAC GCC TCG GCA ACC AAG GAC GGC
 val thr leu gly tyr thr ser gly thr gly gln gly asn ala ser ala thr lys asp gly
 183/61 213/71

AGC CAC TAC AAG ATC ACA GGG TGA AGC GTG GAC TGA CCG TCG CGG TAG CCG CAG CCG CCA
 ser his tyr lys ile thr gly OPA ser val asp OPA arg ser arg AMB pro glu pro pro
 243/81 273/91

TTC TGG TCG CAG GTC TTT CCG GAT GTT CAA GCA ACA AGT CGA CTA CAG GAA GCG GTG AGA
 phe trp ser gln val phe pro asp val gln ala thr ser arg leu gln glu ala val arg
 303/101 333/111

CCA CGA CCG CGG CAG GCA CGA CGG CAA GCC CCG GCG CCG CTC CGG GCC GAA GGT CGT CAT
 pro arg pro arg gln ala arg arg gln ala pro ala pro leu arg ala glu gly arg his
 363/121 393/131

CGA CGG TAA GGA CCA GAA CGT CAC CGG CTC CGT GGT GTG CAC AAC CGC GGC CGG CAA TGT
 arg arg OCH gly pro glu arg his arg leu arg gly val his asn arg gly arg gln cys
 423/141 453/151

CAA CAT CGC GAT CGG CGG GGC GGC GAC CGG CAT TGC CGC CGT GCT CAC CGA CGG CAA CCC
 gln his arg asp arg arg gly gly asp arg his cys arg arg ala his arg arg gln pro
 483/161 513/171

TCC GGA GGT GAA GTC CGT TGG GCT CGG TAA CGT CAA CGG CGT CAC GCT GGG ATA CAC GTC
 ser gly gly glu val arg trp ala arg OCH arg gln arg arg his ala gly ile his val
 543/181 573/191

GGG CAC CGG ACA GGG TAA CGC CTC GGC AAC CAA GGA CGG CAG CCA CTA CAA GAT C
 gly his arg thr gly OCH arg leu gly asn gln gly arg gln pro leu gln asp

SEQ ID N° 23C

FIGURE 23C

91/185

31/11
 CTA ACG ACA GGC AAA GGA GCA CAG GGT GAA GCG TGG ACT GAC GGT CGC GGT AGC CGG AGC
 leu thr thr gly lys gly ala gln gly glu ala trp thr asp gly arg gly ser arg ser
 61/21
 CGC CAT TCT GGT CGC AGG TCT TTC CGG ATG TTC AAG CAA CAA GTC GAC TAC AGG AAG CGG
 arg his ser gly arg arg ser phe arg met phe lys gln gln val asp tyr arg lys arg
 121/41
 TGA GAC CAC GAC CGC GGC AGG CAC GAC GGC AAG CCC CGG CGC CGC TCC GGG CCG AAG GTC
 OPA asp his asp arg gly arg his asp gly lys pro arg arg arg ser gly pro lys val
 181/61
 GTC ATC GAC GGT AAG GAC CAG AAC GTC ACC GGC TCC GTG GTG TGC ACA ACC GCG GCC GGC
 val ile asp gly lys asp gln asn val thr gly ser val val cys thr thr ala ala gly
 241/81
 AAT GTC AAC ATC GCG ATC GGC GGG GCG GCG ACC GGC ATT GCC GCC GTG CTC ACC GAC GGC
 asn val asn ile ala ile gly gly ala ala thr gly ile ala ala val leu thr asp gly
 301/101
 AAC CCT CCG GAG GTG AAG TCC GTT GGG CTC GGT AAC GTC AAC GGC GTC ACG CTG GGA TAC
 asn pro pro glu val lys ser val gly leu gly asn val asn gly val thr leu gly tyr
 361/121
 ACG TCG GGC ACC GGA CAG GGT AAC GCC TCG GCA ACC AAG GAC GGC AGC CAC TAC AAG ATC
 thr ser gly thr gly gln gly asn ala ser ala thr lys asp gly ser his tyr lys ile

SEQ ID N° 24A

FIGURE 24A

32/11
 TAA CGA CAG GCA AAG GAG CAC AGG GTG AAG CGT GGA CTG ACG GTC GCG GTA GCC GGA GCC
 OCH arg gln ala lys glu his arg val lys arg gly leu thr val ala val ala gly ala
 62/21
 GCC ATT CTG GTC GCA GGT CTT TCC GGA TGT TCA AGC AAC AAG TCG ACT ACA GGA AGC GGT
 ala ile leu val ala gly leu ser gly cys ser ser asn lys ser thr thr qly ser gly
 122/41
 GAG ACC ACG ACC GCG GCA GGC ACG ACG GCA AGC CCC GGC GCC GCT CCG GGC CGA AGG TCG
 glu thr thr thr ala ala gly thr thr ala ser pro gly ala ala pro gly arg arg ser
 182/61
 TCA TCG ACG GTA AGG ACC AGA ACG TCA CCG GCT CCG TGG TGT GCA CAA CCG CGG CCG GCA
 ser ser thr val arg thr arg thr ser pro ala pro trp cys ala gln pro arg pro ala
 242/81
 ATG TCA ACA TCG CGA TCG GCG GGG CGG CGA CCG GCA TTG CCG CCG TGC TCA CCG ACG GCA
 met ser thr ser arg ser ala gly arg arg pro ala leu pro pro cys ser pro thr ala
 302/101
 ACC CTC CGG AGG TGA AGT CCG TTG GGC TCG GTA ACG TCA ACG GCG TCA CGC TGG GAT ACA
 thr leu arg arg OPA ser pro leu gly ser val thr ser thr ala ser arg trp asp thr
 362/121
 CGT CGG GCA CCG GAC AGG GTA ACG CCT CGG CAA CCA AGG ACG GCA GCC ACT ACA AGA TC
 arg arg ala pro asp arg val thr pro arg gln pro arg thr ala ala thr thr arg

SEQ ID N° 24B

FIGURE 24B

FEUILLE DE REMPLACEMENT (REGLE 26)

92/185

33/11
 AAC GAC AGG CAA AGG AGC ACA GGG TGA AGC GTG GAC TGA CGG TCG CGG TAG CCG GAG CCG
 asn asp arg gln arg ser thr gly OPA ser val asp OPA arg ser arg AMB pro glu pro
 63/21
 93/31
 CCA TTC TGG TCG CAG GTC TTT CCG GAT GTT CAA GCA ACA AGT CGA CTA CAG GAA GCG GTG
 pro phe trp ser gln val phe pro asp val gln ala thr ser arg leu gln glu ala val
 123/41
 153/51
 AGA CCA CGA CCG CGG CAG GCA CGA CGG CAA GCC CCG GCG CCG CTC CGG GCC GAA GGT CGT
 arg pro arg pro arg gln ala arg arg gln ala pro ala pro leu arg ala glu gly arg
 183/61
 213/71
 CAT CGA CGG TAA GGA CCA GAA CGT CAC CGG CTC CGT GGT GTG CAC AAC CGC GGC CGG CAA
 his arg arg OCH gly pro glu arg his arg leu arg gly val his asn arg gly arg gln
 243/81
 273/91
 TGT CAA CAT CGC GAT CGG CGG GGC GGC GAC CGG CAT TGC CGC CGT GCT CAC CGA CGG CAA
 cys gln his arg asp arg arg gly gln asp arg his cys arg arg ala his arg arg gln
 303/101
 333/111
 CCC TCC GGA GGT GAA GTC CGT TGG GCT CGG TAA CGT CAA CGG CGT CAC GCT GGG ATA CAC
 pro ser gly gly glu val arg trp ala arg OCH arg gln arg arg his ala gly ile his
 363/121
 393/131
 GTC GGG CAC CGG ACA GGG TAA CGC CTC GGC AAC CAA GGA CGG CAG CCA CTA CAA GAT C
 val gly his arg thr gly OCH arg leu gly asn gln gly arg gln pro leu gln asp

SEQ ID N° 24C

FIGURE 24C

Amorce directe

5' ACG CGG CGC AGC CTG TTG 3'

SEQ ID N° 25

FIGURE 25

Amorce inverse

5' CGA CCT TGG GAT TCG CCT 3'

SEQ ID N° 26

FIGURE 26

93/185

31/11
 CCT ACC AGC AAG AGC CCA GGG CTT CAC AGG ACC TAA AAG GAG TAG CGC CCA TGG GCT TGA
 pro thr ser lys ser pro gly leu his arg thr OCH lys glu AMB arg pro trp ala OPA
 61/21
 TCC AAT TTT CCT TCC GCC CCG TGC AAT ACC ATC TGC AAG ACC AGC GAC GGC CCG TGG TTG
 ser asn phe pro ser ala pro cys asn thr ile cys lys thr ser asp gly pro trp leu
 121/41
 CGG TCG CGC AGC TTG CGG AAA CGG GGT ATG GAC CCT GCC GTA CCG TTG TTG CCA CTT GAT
 arg ser arg ser leu arg lys arg gly met asp pro ala val pro leu leu pro leu asp
 181/61
 GTC GTC GCT CTC CAC CCG TCG GGG GGC GAA AGC CAT TCC GAC ACT GGG ATC CTC AAA ACG
 val val ala leu his pro ser gly gly glu ser his ser asp thr gly ile leu lys thr
 241/81
 TCG GCT GAG TGT CTG CAG GGC TCC GGG GAG CAG CCG ATC ATC ACC ATG TAC GAA CTG AAT
 ser ala glu cys leu gln gly ser gly glu gln pro ile ile thr met tyr glu leu asn
 301/101
 AAG TCC CCC CCG CGC GAC TTC CAG ACA TTT GTT GTG GTT TCG GTT GAG GCC GAG GCG AGG
 lys ser pro pro arg asp phe gln thr phe val val val ser val glu ala glu ala arg
 361/121
 CTC ATT TCG CAG CAA GCG GTC TCC GGG TCG CAG CAT CGT TGC GGC GAT CGC GGC GCA GTC
 leu ile ser gln gln ala val ser gly ser gln his arg cys gly asp arg gly ala val
 421/141
 GTC GGA CGA GTC GTC GTC AAC GAC CAC GAT C
 val gly arg val val val asn asp his asp

SEQ ID N° 27A

FIGURE 27A

31/11
 CTA CCA GCA AGA GCC CAG GGC TTC ACA GGA CCT AAA AGG AGT AGC GCC CAT GGG CTT GAT
 leu pro ala arg ala gln gly phe thr gly pro lys arg ser ser ala his gly leu asp
 61/21
 CCA ATT TTC CTT CCG CCC CGT GCA ATA CCA TCT GCA AGA CCA GCG ACG GCC CGT GGT TGC
 pro ile phe leu pro pro arg ala ile pro ser ala arg pro ala thr ala arg gly cys
 121/41
 GGT CGC GCA GCT TGC GGA AAC GGG GTA TGG ACC CTG CCG TAC CGT TGT TGC CAC TTG ATG
 gly arg ala ala cys gly asn gly val trp thr leu pro tyr arg cys cys his leu met
 181/61
 TCG TCG CTC TCC ACC CGT CGG GGG GCG AAA GCC ATT CCG ACA CTG GGA TCC TCA AAA CGT
 ser ser leu ser thr arg arg gly ala lys ala ile pro thr leu gly ser ser lys arg
 241/81
 CGG CTG AGT GTC TGC AGG GCT CCG GGG AGC AGC CGA TCA TCA CCA TGT ACG AAC TGA ATA
 arg leu ser val cys arg ala pro gly ser ser arg ser ser pro cys thr asn OPA ile
 301/101
 AGT CCC CCC CGC GCG ACT TCC AGA CAT TTG TTG TGG TTT CGG TTG AGG CCG AGG CGA GGC
 ser pro pro arg ala thr ser arg his leu leu trp phe arg leu arg pro arg arg gly
 361/121
 TCA TTT CGC AGC AAG CGG TCT CCG GGT CGC AGC ATC GTT GCG GCG ATC GCG GCG CAG TCG
 ser phe arg ser lys arg ser pro gly arg ser ile val ala ala ile ala ala gln ser
 421/141
 TCG GAC GAG TCG TCG TCA ACG ACC ACG ATC
 ser asp glu ser ser ser thr thr thr ile

SEQ ID N° 27B

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 27B

94/185

33/11
TAC CAG CAA GAG CCC AGG GCT TCA CAG GAC CTA AAA GGA GTA GCG CCC ATG GGC TTG ATC
tyr gln gln glu pro arg ala ser gln asp leu lys gly val ala pro met gly leu ile
63/21
CAA TTT TCC TTC CGC CCC GTG CAA TAC CAT CTG CAA GAC CAG CGA CGG CCC GTG GTT GCG
gln phe ser phe arg pro val gln tyr his leu gln asp gln arg arg pro val val ala
123/41
GTC GCG CAG CTT GCG GAA ACG GGG TAT GGA CCC TGC CGT ACC GTT GTT GCC ACT TGA TGT
val ala gln leu ala glu thr gly tyr gly pro cys arg thr val val ala thr OPA cys
183/61
CGT CGC TCT CCA CCC GTC GGG GGG CGA AAG CCA TTC CGA CAC TGG GAT CCT CAA AAC GTC
arg arg ser pro pro val gly gly arg lys pro phe arg his trp asp pro gln asn val
243/81
GGC TGA GTG TCT GCA GGG CTC CGG GGA GCA GCC GAT CAT CAC CAT GTA CGA ACT GAA TAA
gly OPA val ser ala gly leu arg gly ala ala asp his his his val arg thr glu OCH
303/101
GTC CCC CCC GCG CGA CTT CCA GAC ATT TGT TGT GGT TTC GGT TGA GGC CGA GGC GAG GCT
val pro pro ala arg leu pro asp ile cys cys gly phe gly OPA gly arg gly glu ala
363/121
CAT TTC GCA GCA AGC GGT CTC CGG GTC GCA GCA TCG TTG CGG CGA TCG CGG CGC AGT CGT
his phe ala ala ser gly leu arg val ala ala ser leu arg arg ser arg arg ser arg
423/141
CGG ACG AGT CGT CGT CAA CGA CCA CGA TC
arg thr ser arg arg gln arg pro arg

SEQ ID N° 27C

FIGURE 27C

MKTGTATRRRLAVLIALALPGAVALLAEPSATGASDPCAASEVAR
TVGSVAKSMGDYLDSPETNQVMTAVLQQQVGPVSVASLKAHFEANPK
VASDLHALSQPLTDLSTRCSLPISGLQAIGLMQAVQGARR

SEQ ID N° 28

FIGURE 28

GTGGGCAAGC AGCTAGCCGC GCTCGCCGCG CTGGTCGGTG CGTGCATGCT CGCAGCCGGA	60
TGCACCAACG TGGTCGACGG GACCGCCGTG GCTGCCGACA AATCCGGACC ACTGCATCAG	120
GATCCGATAC CGGTTTCAGC GCTTGAAGGG CTGCTTCTCG ACTTGAGCCA GATCAATGCC	180
GCGCTGGGTG CGACATCGAT GAAGGTGTGG TTCAACGCCA AGGCAATGTG GGAAGTCTAT	240
AAGAGCGTGG CCGACAAGAA TTGCCTGGCT ATCGACGGTC CAGCACAGGA AAAGGTCTAT	300
GCCGGCACCG GGTGGACCGC TATGCGCGGC CAACGGCTGG ATGACAGCAT CGATGACTCC	360
AAGAAACGCG ACCACTACGC CATTCAAGCG GTCGTCGGCT TCCCGACCGC ACATGATGCC	420
GAGGAGTTCT ACAGTCTCTC GGTGCAAAGC TGGAGCAGCT GCTCGAACCG CCGGTTTGTC	480
GAAATCACCC CCGGACAGGA CGACGCCGCC TGGACTGTGG CTGACGTTGT CAACGACAAC	540
GGCATGCTCA GTAGCTCGCA GGTTCAGGAA GCGGCGCAGC GATGGACCTG CCAGCGTGCC	600
CTGACTGCGC GCAACAACGT CACTATCGAC ATTGTACAGT GCGCCTATAG CCAACCGGAT	660
TTGGTGGCGA TTGGCATCGC TAACCAAATC GCGGCCAAGG TTGCTAAGCA GTAG	714

SEQ ID N° 29

FEUILLE DE REMPLACEMENT (REGLE 26)

95/185

MGKQLAALAALVGACMLAAGCTNVVDGTAVAADKSGPLHQDPIPVFTSALEGLLLDLSQINAALGATS
 MKVWFNAKAMWDWSKSVADKNCLAI DGPAQEKVYAGTGFTWTAMRGQRLDDSIDDSKKRDHYAIQAVV
 GFPTAHDAEEFYSSSVQSWSSCSNRRFVEVTFTPGQDDAAWTVADVVDNGMLSSSQVQEGGDGWTCTQ
 RALTARNNVITIDIVTCAYSQPDIVFTAIGIANQIAAKVAKQ

SEQ ID N° 30

FIGURE 30

1/1	31/11
AGG CGA ATA CCC GCG AGG GCA GCG CGA CGG CGG CCC TGC CGG CGC CGT GGC TGC TGA ACA	
arg arg ile pro ala arg ala ala arg arg arg pro cys arg arg arg gly cys OPA thr	
61/21	91/31
ACA CAT CCC AGC CGC GCA CGC TTC CGG TAT GCG GCA GGA TAA ACG ACC CCA ACA GCA CGA	
thr his pro ser arg ala arg phe arg tyr ala ala gly OCH thr thr pro thr ala arg	
121/41	151/51
ACA CCA GGA TTG CGA CAA CCA AAG CCC TCG CGC CTG GCT CGA TTT CGC GCG CAA CGC GGC	
thr pro gly leu arg gln pro lys pro ser arg leu ala arg phe arg ala gln arg gly	
181/61	211/71
GTT CTG CCG CCT CGA TCT CAG CGC GGA GGG CGT CGA GAT C	
val leu pro pro arg ser gln arg gly gly arg arg asp	

SEQ ID N° 31A

FIGURE 31A

1/1	31/11
GGC GAA TAC CCG CGA GGG CAG CGC GAC GGC GGC CCT GCC GGC GCC GTG GCT GCT GAA CAA	
gly glu tyr pro arg gly gln arg asp gly gly pro ala gly ala val ala ala glu gln	
61/21	91/31
CAC ATC CCA GCC GCG CAC GCT TCC GGT ATG CGG CAG GAT AAA CGA CCC CAA CAG CAC GAA	
his ile pro ala ala his ala ser gly met arg gln asp lys arg pro gln gln his glu	
121/41	151/51
CAC CAG GAT TGC GAC AAC CAA AGC CCT CGC GCC TGG CTC GAT TTC GCG CGC AAC GCG GCG	
his gln asp cys asp asn gln ser pro arg ala trp leu asp phe ala arg asn ala ala	
181/61	211/71
TTC TGC CGC CTC GAT CTC AGC GCG GAG GGC GTC GAG ATC	
phe cys arg leu asp leu ser ala glu gly val glu ile	

SEQ ID N° 31B

FIGURE 31B

96/185

1/1 31/11
 GCG AAT ACC CGC GAG GGC AGC GCG ACG GCG GCC CTG CCG GCG CCG TGG CTG CTG AAC AAC
 ala asn thr arg glu gly ser ala thr ala ala leu pro ala pro trp leu leu asn asn
 61/21 91/31
 ACA TCC CAG CCG CGC ACG CTT CCG GTA TGC GGC AGG ATA AAC GAC CCC AAC AGC ACG AAC
 thr ser gln pro arg thr leu pro val cys gly arg ile asn asp pro asn ser thr asn
 121/41 151/51
 ACC AGG ATT CCG ACA ACC AAA GCC CTC GCG CCT GGC TCG ATT TCG CGC GCA ACG CGG CGT
 thr arg ile ala thr thr lys ala leu ala pro gly ser ile ser arg ala thr arg arg
 181/61 211/71
 TCT GCC GCC TCG ATC TCA GCG CGG AGG GCG TCG AGA TC
 ser ala ala ser ile ser ala arg arg ala ser arg

SEQ ID N° 31C

FIGURE 31C

ORF d'après Cole et al. (Nature 393:537-544) et contenant seq31A.

1/1 31/11
 taa acg acc cca aca gca cga aca cca gga ttg cga caa cca aag ccc tcg cgc ctg gct
 OCH thr thr pro thr ala arg thr pro gly leu arg gln pro lys pro ser arg leu ala
 61/21 91/31
 cga ttt cgc gcg caa cgc ggc gtt ctg ccg cct cga tct cag cgc gga ggg cgt cga gat
 arg phe arg ala gln arg gly val leu pro pro arg ser gln arg gly gly arg arg asp
 121/41 151/51
 ccc cgg cgt cgt gtt cgt ggc tca tca tct gca tcc tcc ggg ctt ggc cgc gct gac cgg
 pro arg arg arg val arg gly ser ser ser ala ser ser gly leu gly arg ala asp arg
 181/61 211/71
 cag ccc gac ccc agg cat gcc cag gcc gac gcc gcg ccc cgg ctg ccc ggc ggt gtg cgc
 gln pro asp pro arg his ala gln ala asp gly ala pro arg leu pro gly gly val arg
 241/81 271/91
 gtc gcc ggc gcg ggt gcg gcg gtg ggt cag gac gcc ggc gtc ggc gat gag gtg gtg cgg
 val ala gly ala gly ala ala val gly gln asp ala gly val gly asp glu val val arg
 301/101 331/111
 cgc cgc ttc ggt gac ctt cgt ggt gat gac gtc gcc ggg acg cac gcg cgg ctg gcc ggc
 arg arg phe gly asp leu arg gly asp asp val ala gly thr his ala arg leu ala gly
 361/121 391/131
 ggt gaa gtg cac cag gcg ccc gtc gcg cgc ccg ccc gct cat gcg cgc cgt gac ggt gtc
 gly glu val his gln ala pro val ala arg pro pro ala his ala arg arg asp gly val
 421/141 451/151
 ctt gcg ccc ttc ccc ggt ggc cac cag cac ctc gac ggc ctg ccc gac cag ggc gcg gtt
 leu ala pro phe pro gly gly his gln his leu asp gly leu pro asp gln gly ala val
 481/161 511/171
 ggc ttc cag cga gat ttg ctc ctg cag cgc gat cag gcg ttc ata gcg ttc ctg cac aac
 gly phe gln arg asp leu leu leu gln arg asp gln ala phe ile ala phe leu his asn
 541/181 571/191
 ggc ttt cgg cag ctg tcc gtc gag ttg cgc gcc cgg tgt ccc ggg ccg ctt gga gta ttg
 gly phe arg gln leu ser val glu leu arg gly arg cys pro gly pro leu gly val leu
 601/201 631/211
 gaa ggt aaa tgc ggc cgc gaa gcg ggc ccg gcg cac cac gtc gag cgt ggc cgc gaa gtc
 glu gly lys cys gly arg glu ala gly pro ala his his val glu arg gly arg glu val
 661/221 691/231
 ctc ttc ggt ctc ccc ggg gaa acc gac gat cag atc ggt ggt aat cgc ggc arg cgg gat
 leu phe gly leu pro gly glu thr asp asp gln ile gly gly asn arg gly met arg asp
 721/241 751/251
 ggc cgc ccg cac gcg ctc gat gat gcc gag gta gcg ctc ggc acg ata gga ccg ccg cat
 gly arg pro his ala leu asp asp ala glu val ala leu gly thr ile gly pro pro his
 781/261 811/271
 cgc gcg cag gat ccg gtc gga tcc gga ctg tag
 arg ala gln asp pro val gly ser gly leu AMB

SEQ ID N° 31F

FEUILLE DE REMPLACEMENT (REGLE 26)

97/185

```

1/1                               31/11
aga ctg gtg tac acg gag acc aag ctg aac tcg gca ttc tcc ttc ggc ggg cct aag tgt
arg leu val tyr thr glu thr lys leu asn ser ala phe ser phe gly gly pro lys cys
61/21                               91/31
cta gtg aag gtc att cag aaa ctg tct ggc ttg agc atc aac cgg ttc atc gcg att gac
leu val lys val ile gln lys leu ser gly leu ser ile asn arg phe ile ala ile asp
121/41                               151/51
ttc gtc ggt ttc gcg cgg atg gtc gag gcc ctc ggc ggc gtc gag gta tgc agc acc acc
phe val gly phe ala arg met val glu ala leu gly gly val glu val cys ser thr thr
181/61                               211/71
ccg ttg cgg gac tac gaa ctg ggc acg gtg ctg gag cac gcc gga cgc cag gtc att gac
pro leu arg asp tyr glu leu gly thr val leu glu his ala gly arg gln val ile asp
241/81                               271/91
ggg ccg acc gcg ctg aac tat gtg cgc gct cgc cag gtc acc acc gag agc aat ggc gac
gly pro thr ala leu asn tyr val arg ala arg gln val thr thr glu ser asn gly asp
301/101                               331/111
tac ggg cgc atc aaa cgc cag cag ttg ttt ttg tct tct ctg ctg cgt tct atg atc
tyr gly arg ile lys arg gln gln leu phe leu ser ser leu leu arg ser met ile

```

SEQ ID N° 32A

FIGURE 32A

```

1/1                               31/11
gac tgg tgt aca cgg aga cca agc tga act cgg cat tct cct tct ggc ggc cta agt gtc
asp trp cys thr arg arg pro ser OPA thr arg his ser pro ser ala gly leu ser val
61/21                               91/31
tag tga agg tca ttc aga aac tgt cgg gct tga gca tca acc ggt tca tct cga ttg act
AMB OPA arg ser phe arg asn cys arg ala OPA ala ser thr gly ser ser arg leu thr
121/41                               151/51
tcg tct gtt tct cgc gga tgg tct agg ccc tct ggc ggc tct agg tat gca gca cca ccc
ser ser val ser arg gly trp ser arg pro ser ala ala ser arg tyr ala ala pro pro
181/61                               211/71
cgt tgc ggg act acg aac tgg gca cgg tgc tgg agc acg ccg gac gcc agg tca ttg acg
arg cys gly thr thr asn trp ala arg cys trp ser thr pro asp ala arg ser leu thr
241/81                               271/91
ggc cga ccg cgc tga act atg tgc ggc ctc gcc agg tca cca ccg aga gca atg gcg act
gly arg pro arg OPA thr met cys ala leu ala arg ser pro pro arg ala met ala thr
301/101                               331/111
acg ggc gca tca aac gcc agc agt tgt ttt tgt cgt cgc tgc tgc gtt cga tga tc
thr gly ala ser asn ala ser ser cys phe cys arg arg cys cys val arg OPA

```

SEQ ID N° 32B

FIGURE 32B

98/185

```

1/1                               31/11
act ggt gta cac gga gac caa gct gaa ctc ggc att ctc ctt cgg cgg gcc taa gtg tot
thr gly val his gly asp gln ala glu leu gly ile leu leu arg arg ala OCH val ser
61/21                               91/31
agt gaa ggt cat tca gaa act gtc ggg ctt gag cat caa ccg gtt cat cgc gat tga ctt
ser glu gly his ser glu thr val gly leu glu his gln pro val his arg asp OPA leu
121/41                               151/51
cgt cgg ttt cgc gcg gat ggt cga ggc cct cgg cgg cgt cga ggt atg cag cac cac ccc
arg arg phe arg ala asp gly arg gly pro arg arg arg arg gly met gln his his pro
181/61                               211/71
gtt gcg gga cta cga act ggg cac ggt gct gga gca cgc cgg acg cca ggt cat tga cgg
val ala gly leu arg thr gly his gly ala gly ala arg arg thr pro gly his OPA arg
241/81                               271/91
gcc gac cgc gct gaa cta tgt gcg cgc tcg cca ggt cac cac cga gag caa tgg cga cta
ala asp arg ala glu leu cys ala arg ser pro gly his his arg glu gln trp arg leu
301/101                               331/111
cgg gcg cat caa acg cca gca gtt gtt ttt gtc gtc gct gct gcg ttc gat gat c
arg ala his gln thr pro ala val val phe val val ala ala ala phe asp asp

```

SEQ ID N° 32C

FIGURE 32C

séquence Rv0822c prédite par Cole et al. (Nature 393:537-544) et contenant seq 32A

```

1/1                               31/11
atg agt gac ggc gag agc gcc gcg ccg tgg gca cgg ctc tcc gag tca gca ttc ccc gat
Met ser asp gly glu ser ala ala pro trp ala arg leu ser glu ser ala phe pro asp
61/21                               91/31
ggt gtt gac cga tgg atc acg gta ccg ccc gcc aca tgg gtg gca gcc cag ggt ccg cgg
gly val asp arg trp ile thr val pro pro ala thr trp val ala ala gln gly pro arg
121/41                               151/51
gac acc cag aat gtc ggc tgt cat gcc acc ggc gcc gtt agt gtg gcc gat ctg atc gcc
asp thr gln asn val gly cys his ala thr gly ala val ser val ala asp leu ile ala
181/61                               211/71
agg ctc ggc ccc gct ttt cct gac ctc ccc acg cac cgc cat gtc gcc ccc gaa ccc gag
arg leu gly pro ala phe pro asp leu pro thr his arg his val ala pro glu pro glu
241/81                               271/91
cca tcc ggc cgc gcc ccg aag gtc cac gac gac gcc gac gac cag cag gac acc gag gct
pro ser gly arg gly pro lys val his asp asp ala asp asp gln gln asp thr glu ala
301/101                               331/111
atc gcc atc ccg gcc cac tcg ctc gag ttc ctc tcg gag ctt ccc gac ctc cgg gca gcc
ile ala ile pro ala his ser leu glu phe leu ser glu leu pro asp leu arg ala ala
361/121                               391/131
aac tat ccg cgc gcc gac cac gcc cgc cgt gaa ccc gag cta ccc ggc aag cag cta acc
asn tyr pro arg ala asp his ala arg arg glu pro glu leu pro gly lys gln leu thr
421/141                               451/151
gga tcg gct cga gtg ccg cca ttg ccg atc cgc cga acg tcg ccc gcg ccc gcc aag cca
gly ser ala arg val arg pro leu arg ile arg arg thr ser pro ala pro ala lys pro
481/161                               511/171
gcg ccg aac tcc ggc cgg cgc ccg atg gtg ctg gcc gcg cgc tcg ctg gcg gct ctg ttt
ala pro asn ser gly arg arg pro met val leu ala ala arg ser leu ala ala leu phe
541/181                               571/191
gcc gct ctg gcg ttg gcg ctg acc ggc ggg gca tgg cag tgg agc gcg tcg aag aac agc
ala ala leu ala leu ala leu thr gly gly ala trp gln trp ser ala ser lys asn ser
601/201                               631/211
cgg ctg aac atg gta agc gcg ctc gac ccg cat tcg gcc gac atc gtc aac ccc agc ggg
arg leu asn met val ser ala leu asp pro his ser gly asp ile val asn pro ser gly

```

SEQ ID N° 32D

FEUILLE DE REMPLACEMENT (REGLE 26)

99/185

661/221
cag cat ggc gac gag aac ttc ttg ctc gtc ggt atg gac tct cgt gcc ggg gcg aac gcc
gln his gly asp glu asn phe leu leu val gly met asp ser arg ala gly ala asn ala
721/241
aat atc ggc gcc ggc gac gcc gag gac gcc ggc ggc gca cgt tcg gac acc gtc atg ctg
asn ile gly ala gly asp ala glu asp ala gly gly ala arg ser asp thr val met leu
781/261
gtc aac att ccg gcc agc cgc gag cgg gtc gtc gcg gtg tcg ttc ccc cgc gac ctg gcg
val asn ile pro ala ser arg glu arg val val ala val ser phe pro arg asp leu ala
841/281
atc act cca atc caa tgc gag gcg tgg aac ccc gag acc ggt aag tac gga ccc atc tac
ile thr pro ile gln cys glu ala trp asn pro glu thr gly lys tyr gly pro ile tyr
901/301
gac gag aag acg gga acg atg ggt ccc aga ctg gtg tac acg gag acc aag ctg aac tcg
asp glu lys thr gly thr met gly pro arg leu val tyr thr glu thr lys leu asn ser
991/321
gca ttc tcc ttc ggc ggg cct aag tgt cta gtg aag gtc att cag aaa ctg tcg ggc ttg
ala phe ser phe gly gly pro lys cys leu val lys val ile gln lys leu ser gly leu
1021/341
agc atc aac cgg ttc atc gcg att gac ttc gtc ggt ttc gcg cgg atg gtc gag gcc ctc
ser ile asn arg phe ile ala ile asp phe val gly phe ala arg met val glu ala leu
1081/361
ggc ggc gtc gag gta tgc agc acc acc ccg ttg cgg gac tac gaa ctg ggc acg gtg ctg
gly gly val glu val cys ser thr thr pro leu arg asp tyr glu leu gly thr val leu
1141/381
gag cac gcc gga cgc cag gtc att gac ggg ccg acc gcg ctg aac tat gtg cgc gct cgc
glu his ala gly arg gln val ile asp gly pro thr ala leu asn tyr val arg ala arg
1201/401
cag gtc acc acc gag agc aat ggc gac tac ggg cgc atc aaa cgc cag cag ttg ttt ttg
gln val thr thr glu ser asn gly asp tyr gly arg ile lys arg gln gln leu phe leu
1261/421
tcg tcg ctg ctg cgt tcg atg atc tcg acg gac acc ttg ttc aac ctc agc agg ctc aac
ser ser leu leu arg ser met ile ser thr asp thr leu phe asn leu ser arg leu asn
1321/441
aac gtc gtc aac atg ttc atc ggt aac agc tac gtg gac aac gtc aag acc aaa gac ctg
asn val val asn met phe ile gly asn ser tyr val asp asn val lys thr lys asp leu
1381/461
gtc gaa ctc ggt cga tcg ttg cag cat atg gcg gcc ggg cac gtc acg ttc gtg acc gtt
val glu leu gly arg ser leu gln his met ala ala gly his val thr phe val thr val
1441/481
ccg acc ggt ata acc gac cag aac ggc gac gag ccc ccg cgt acc tcc gac atg aag gcg
pro thr gly ile thr asp gln asn gly asp glu pro pro arg thr ser asp met lys ala
1501/501
ctt ttc acc gcc atc atc gac gac gat ccg ctg ccc ctg gaa aac gat cac aac gcc cag
leu phe thr ala ile ile asp asp asp pro leu pro leu glu asn asp his asn ala gln
1561/521
cgt ctg ggc aac acg ccg tcg acc ccg ccg acc acc acc aag aag gcg ccg cag gcg ggt
arg leu gly asn thr pro ser thr pro pro thr thr thr lys lys ala pro gln ala gly
1621/541
ctg acc aac gag att cag cac cag cag gtt acg acg acc tcg cca aaa gag gtc aca gtg
leu thr asn glu ile gln his gln gln val thr thr thr ser pro lys glu val thr val
1681/561
cag gtc tct aac tcg acc ggc cag gcc ggt ttg gcc acc acc gcc acc gat cag ctc aag
gln val ser asn ser thr gly gln ala gly leu ala thr thr ala thr asp gln leu lys
1741/581
cgg aac ggc ttc aac gtg atg gct ccg gac gac tac ccg agt tcg ctg ctg gcc acc aca
arg asn gly phe asn val met ala pro asp asp tyr pro ser ser leu leu ala thr thr
1801/601
gtg ttt ttt tcg ccc ggc aac gaa cag gct gcc gcc acc gtg gcc gcc gtg ttc ggc cag
val phe phe ser pro gly asn glu gln ala ala ala thr val ala ala val phe gly gln
1861/621
tca aag atc gag cgg gtg acc ggg atc ggc caa ctg gtc cag gtg gtg ctg gcc caa gac
ser lys ile glu arg val thr gly ile gly gln leu val gln val val leu gly gln asp

SEQ ID N° 32D (suite 1)

FIGURE 32D (suite 1)
FEUILLE DE REMPLACEMENT (REGLE 26)

100/185

1921/641

ttc agc gcg gtg cgc gct ccc ctg ccg agt ggc tcc acc gtc agc gtg cag ata agc cgc
phe ser ala val arg ala pro leu pro ser gly ser thr val ser val gln ile ser arg

1981/661

aac tcc tcc agc cca ccg acc aag ctg ccc gag gac ctg acg gtc acc aac gcc gcc gac
asn ser ser ser pro pro thr lys leu pro glu asp leu thr val thr asn ala ala asp

2041/681

acc acc tgc gag tag
thr thr cys glu AMB

1951/651

ggc tcc acc gtc agc gtg cag ata agc cgc
gly ser thr val ser val gln ile ser arg

2011/671

SEQ ID N° 32D (suite 2)

FIGURE 32D (suite 2)

ORF d'après Cole et al. (Nature 393:537-544) et contenant Rv0822c

1/1

tag gac atg agt gac ggc gag agc gcc gcg ccg tgg gca cgg ctc tcc gag tca gca ttc
AMB asp met ser asp gly glu ser ala ala pro trp ala arg leu ser glu ser ala phe

61/21

ccc gat ggt gtt gac cga tgg atc acg gta ccg ccc gcc aca tgg gtg gca gcc cag ggt
pro asp gly val asp arg trp ile thr val pro pro ala thr trp val ala ala gln gly

121/41

ccg cgg gac acc cag aat gtc ggc tgt cat gcc acc ggc gcc gtt agt gtg gcc gat ctg
pro arg asp thr gln asn val gly cys his ala thr gly ala val ser val ala asp leu

181/61

atc gcc agg ctc ggc ccc gct ttt cct gac ctc ccc acg cac cgc cat gtc gcc ccc gaa
ile ala arg leu gly pro ala phe pro asp leu pro thr his arg his val ala pro glu

241/81

ccc gag cca tcc ggc cgc ggc ccg aag gtc cac gac gcc gac gac cag cag gac acc
pro glu pro ser gly arg gly pro lys val his asp asp ala asp asp gln gln asp thr

301/101

gag gct atc gcc atc ccg gcc cac tcg ctc gag ttc ctc tcg gag ctt ccc gac ctc cgg
glu ala ile ala ile pro ala his ser leu glu phe leu ser glu leu pro asp leu arg

361/121

gca gcc aac tat ccg cgc gcc gac cac gcc cgc cgt gaa ccc gag cta ccc ggc aag cag
ala ala asn tyr pro arg ala asp his ala arg arg glu pro glu leu pro gly lys gln

421/141

cta acc gga tcg gct cga gtg cgg cca ttg cgg atc cgc cga acg tcg ccc gcg ccc gcc
leu thr gly ser ala arg val arg pro leu arg ile arg arg thr ser pro ala pro ala

481/161

aag cca gcg ccg aac tcc ggc cgg cgc ccg atg gtg ctg gcc gcg cgc tcg ctg gcg gct
lys pro ala pro asn ser gly arg arg pro met val leu ala ala arg ser leu ala ala

541/181

ctg ttt gcc gct ctg gcg ttg gcg ctg acc ggc ggg gca tgg cag tgg agc gcg tcg aag
leu phe ala ala leu ala leu ala leu thr gly gly ala trp gln trp ser ala ser lys

601/201

aac agc cgg ctg aac atg gta agc gcg ctc gac ccg cat tcg ggc gac atc gtc aac ccc
asn ser arg leu asn met val ser ala leu asp pro his ser gly asp ile val asn pro

661/221

agc ggg cag cat ggc gac gag aac ttc ttg ctc gtc ggt atg gac tct cgt gcc ggg gcg
ser gly gln his gly asp glu asn phe leu leu val gly met asp ser arg ala gly ala

721/241

aac gcc aat atc ggc gcc ggc gac gcc gag gac gcc ggc ggc gca cgt tcg gac acc gtc
asn ala asn ile gly ala gly asp ala glu asp ala gly gly ala arg ser asp thr val

781/261

atg ctg gtc aac att ccg gcc agc cgc gag ccg gtc gtc gcg gtg tcg ttc ccc cgc gac
met leu val asn ile pro ala ser arg glu arg val val ala val ser phe pro arg asp

SEQ ID N° 32F

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 32F

101/185

841/281
 ctg gcg atc act cca atc caa tgc gag gcg
 leu ala ile thr pro ile gln cys glu ala
 901/301
 atc tac gag gag aag acg gga acg atg ggt
 ile tyr asp glu lys thr gly thr met gly
 961/321
 aac tcg gca ttc tcc ttc ggc ggg cct aag
 asn ser ala phe ser phe gly gly pro lys
 1021/341
 gcc ttg agc atc aac cgg ttc atc gcg att
 gly leu ser ile asn arg phe ile ala ile
 1081/361
 gcc ctc ggc ggc gtc gag gta tgc agc acc
 ala leu gly gly val glu val cys ser thr
 1141/381
 gtg ctg gag cac gcc gga cgc cag gtc att
 val leu glu his ala gly arg gln val ile
 1201/401
 gct cgc cag gtc acc acc gag agc aat ggc
 ala arg gln val thr thr glu ser asn gly
 1261/421
 ttt ttg tcg tcg ctg ctg cgt tcg atg atc
 phe leu ser ser leu leu arg ser met ile
 1321/441
 ctc aac aac gtc gtc aac atg ttc atc ggt
 leu asn asn val val asn met phe ile gly
 1381/461
 gag ctg gtc gaa ctc ggt cga tcg ttg cag
 asp leu val glu leu gly arg ser leu gln
 1441/481
 acc gtt ccg acc ggt ata acc gag cag aac
 thr val pro thr gly ile thr asp gln asn
 1501/501
 aag gcg ctt ttc acc gcc atc atc gag gag
 lys ala leu phe thr ala ile ile asp asp
 1561/521
 gcc cag cgt ctg ggc aac acg ccg tcg acc
 ala gln arg leu gly asn thr pro ser thr
 1621/541
 gcg ggt ctg acc aac gag att cag cac cag
 ala gly leu thr asn glu ile gln his gln
 1681/561
 aca gtg cag gtc tct aac tcg acc ggc cag
 thr val gln val ser asn ser thr gly gln
 1741/581
 ctc aag ccg aac ggc ttc aac gtg atg gct
 leu lys arg asn gly phe asn val met ala
 1801/601
 acc aca gtg ttt ttt tcg ccc ggc aac gaa
 thr thr val phe phe ser pro gly asn glu
 1861/621
 gcc cag tca aag atc gag ccg gtg acc ggg
 gly gln ser lys ile glu arg val thr gly
 1921/641
 caa gag ttc agc gcg gtg cgc gct ccc ctg
 gln asp phe ser ala val arg ala pro leu
 1981/661
 agc cgc aac tcc tcc agc cca ccg acc aag
 ser arg asn ser ser ser pro pro thr lys
 2041/681
 gcc gag acc acc tgc gag tag
 ala asp thr thr cys glu AMB

871/291
 tgg aac ccc gag acc ggt aag tac gga ccc
 trp asn pro glu thr gly lys tyr gly pro
 931/311
 ccc aga ctg gtg tac acg gag acc aag ctg
 pro arg leu val tyr thr glu thr lys leu
 991/331
 tgt cta gtg aag gtc att cag aaa ctg tcg
 cys leu val lys val ile gln lys leu ser
 1051/351
 gac ttc gtc ggt ttc gcg ccg atg gtc gag
 asp phe val gly phe ala arg met val glu
 1111/371
 acc ccg ttg ccg gag tac gaa ctg gcc acg
 thr pro leu arg asp tyr glu leu gly thr
 1171/391
 gag ggg ccg acc gcg ctg aac tat gtg cgc
 asp gly pro thr ala leu asn tyr val arg
 1231/411
 gac tac ggg cgc atc aaa cgc cag cag ttg
 asp tyr gly arg ile lys arg gln gln leu
 1291/431
 tcg acg gag acc ttg ttc aac ctc agc agg
 ser thr asp thr leu phe asn leu ser arg
 1351/451
 aac agc tac gtg gag aac gtc aag acc aaa
 asn ser tyr val asp asn val lys thr lys
 1411/471
 cat atg gcg gcc ggg cac gtc acg ttc gtg
 his met ala ala gly his val thr phe val
 1471/491
 gcc gag gag ccc ccg cgt acc tcc gag atg
 gly asp glu pro pro arg thr ser asp met
 1531/511
 gat ccg ctg ccc ctg gaa aac gat cac aac
 asp pro leu pro leu glu asn asp his asn
 1591/531
 ccg ccg acc acc acc aag aag gcg ccg cag
 pro pro thr thr thr lys lys ala pro gln
 1651/551
 cag gtt acg acg acc tcg cca aaa gag gtc
 gln val thr thr thr ser pro lys glu val
 1711/571
 gcc ggt ttg gcc acc acc gcc acc gat cag
 ala gly leu ala thr thr ala thr asp gln
 1771/591
 ccg gag gag tac ccg agt tcg ctg ctg gcc
 pro asp asp tyr pro ser ser leu leu ala
 1831/611
 gcc gcc acc gtg gcc gcc gtg ttc
 gln ala ala ala thr val ala ala val phe
 1891/631
 atc gcc caa ctg gtc cag gtg gtg ctg gcc
 ile gly gln leu val gln val val leu gly
 1951/651
 acc gtc agc gtg cag ata
 pro ser gly ser thr val ser val gln ile
 2011/671
 gag gac ctg acg gtc acc aac gcc
 pro glu asp leu thr val thr asn ala

SEQ ID 32F (suite 1)

 FIGURE 32F (suite 1)
 FEUILLE DE REMPLACEMENT (REGLE 26)

102/185

1/1 31/11
 CGT CAC CTC TGC CAT GGT CCA TCT ACG GTA TCT GCG ACA AGG GCA GCG TCG ATC CCT CGA
 arg his leu cys his gly pro ser thr val ser ala thr arg ala ala ser ile pro arg
 61/21 91/31
 CAT GCA GAG TCG GTG TTC GCT TCA CGC GAA CTA GGC GCG CCT AGC CTG GAC GAG TCC CCG
 his ala glu ser val phe ala ser arg glu leu gly ala pro ser leu asp glu ser pro
 121/41 151/51
 GGC CGA CAT TCG CCC GAG GCC TTG GCC TCC ATC ACC TAA TTG TGT GCA AAA CCG TAT CTA
 gly arg his ser pro glu ala leu ala ser ile thr OCH leu cys ala lys pro tyr leu
 181/61 211/71
 ATT GAT ACG ATT GCG CAC ATG GCT ATC TGG GAT C
 ile asp thr ile ala his met ala ile trp asp

SEQ ID N° 33A

FIGURE 33A

1/1 31/11
 GTC ACC TCT GCC ATG GTC CAT CTA CGG TAT CTG CGA CAA GGG CAG CGT CGA TCC CTC GAC
 val thr ser ala met val his leu arg tyr leu arg gln gly gln arg arg ser leu asp
 61/21 91/31
 ATG CAG AGT CGG TGT TCG CTT CAC GCG AAC TAG GCG CGC CTA GCC TGG ACG AGT CCC CGG
 met gln ser arg cys ser leu his ala asn AMB ala arg leu ala trp thr ser pro arg
 121/41 151/51
 GCC GAC ATT CGC CCG AGG CCT TGG CCT CCA TCA CCT AAT TGT GTG CAA AAC CGT ATC TAA
 ala asp ile arg pro arg pro trp pro pro ser pro asn cys val gln asn arg ile OCH
 181/61 211/71
 TTG ATA CGA TTG CGC ACA TGG CTA TCT GGG ATC
 leu ile arg leu arg thr trp leu ser gly ile

SEQ ID N° 33B

FIGURE 33B

1/1 31/11
 CCG TCA CCT CTG CCA TGG TCC ATC TAC GGT ATC TGC GAC AAG GGC AGC GTC GAT CCC TCG
 pro ser pro leu pro trp ser ile tyr gly ile cys asp lys gly ser val asp pro ser
 61/21 91/31
 ACA TGC AGA GTC GGT GTT CGC TTC ACG CGA ACT AGG CGC GCC TAG CCT GGA CGA GTC CCC
 thr cys arg val gly val arg phe thr arg thr arg arg ala AMB pro gly arg val pro
 121/41 151/51
 GGG CCG ACA TTC GCC CGA GGC CTT GGC CTC CAT CAC CTA ATT GTG TGC AAA ACC GTA TCT
 gly pro thr phe ala arg gly leu gly leu his his leu ile val cys lys thr val ser
 181/61 211/71
 AAT TGA TAC GAT TGC GCA CAT GGC TAT CTG GGA TC
 asn OPA tyr asp cys ala his gly tyr leu gly

SEQ ID N° 33C

FIGURE 33C
 FEUILLE DE REMPLACEMENT (REGLE 26)

103/185

séquence Rv1044 prédite par Cole et al. (Nature 393:537-544) et contenant seq33A

```

1/1                               31/11
ttg tgt gca aaa ccg tat cta att gat acg att gcg cac atg gct atc tgg gat cgc ctc
leu cys ala lys pro tyr leu ile asp thr ile ala his met ala ile trp asp arg leu
61/21                             91/31
gtc gag gtt gcc gcc gag caa cat ggc tac gtc acg act cgc gat gcg cga gac atc ggc
val glu val ala ala glu gln his gly tyr val thr thr arg asp ala arg asp ile gly
121/41                           151/51
gtc gac cct gtg cag ctc cgc ctc cta gcg ggg cgc gga cgt ctt gag cgt gtc ggc cga
val asp pro val gln leu arg leu leu ala gly arg gly arg leu glu arg val gly arg
181/61                           211/71
ggt gtg tac cgg gtg ccc gtg ctg ccg cgt ggt gag cac gac gat ctc gca gcc gca gtg
gly val tyr arg val pro val leu pro arg gly glu his asp asp leu ala ala ala val
241/81                           271/91
tcg tgg act ttg ggg cgt ggc gtt atc tcg cat gag tcg gcc ttg gcg ctt cat gcc ctc
ser trp thr leu gly arg gly val ile ser his glu ser ala leu ala leu his ala leu
301/101                          331/111
gct gac gtg aac ccg tcg cgc atc cat ctc acc gtc ccg cgc aac aac cat ccg cgt gcg
ala asp val asn pro ser arg ile his leu thr val pro arg asn asn his pro arg ala
361/121                          391/131
gcc ggg ggc gag ctg tac cga gtt cac cgc cgc gac ctc cag gca gcc cac gtc act tcg
ala gly gly glu leu tyr arg val his arg arg asp leu gln ala ala his val thr ser
421/141                          451/151
gtc gac gga ata ccc gtc acg acg gtt gcg cgc acc atc aaa gac tgc gtg aag acg ggc
val asp gly ile pro val thr thr val ala arg thr ile lys asp cys val lys thr gly
481/161                          511/171
acg gat cct tat cag ctt cgg gcc gcg atc gag cga gcc gaa gcc gag ggc acg ctt cgt
thr asp pro tyr gln leu arg ala ala ile glu arg ala glu ala glu gly thr leu arg
541/181                          571/191
cgt ggg tca gca gct gag cta cgc gct gcg ctc gat gag acc act gcc gga tta cgc gct
arg gly ser ala ala glu leu arg ala ala leu asp glu thr thr ala gly leu arg ala
601/201
cgg ccg aag cga gca tcg gcg tga
arg pro lys arg ala ser ala OPA

```

SEQ ID N° 33D

FIGURE 33D

104/185

ORF d'après Cole et al. (Nature 393:537-544) et contenant Rv1044

```

1/1                                31/11
taa ttg tgt gca aaa ccg tat cta att gat acg att gcg cac atg gct atc tgg gat cgc
OCH leu cys ala lys pro tyr leu ile asp thr ile ala his met ala ile trp asp arg
61/21                                91/31
ctc gtc gag gtt gcc gcc gag caa cat ggc tac gtc acg act cgc gat gcg cga gac atc
leu val glu val ala ala glu gln his gly tyr val thr thr arg asp ala arg asp ile
121/41                                151/51
ggc gtc gac cct gtg cag ctc cgc ctc cta gcg ggg cgc gga cgt ctt gag cgt gtc ggc
gly val asp pro val gln leu arg leu leu ala gly arg gly arg leu glu arg val gly
181/61                                211/71
cga ggt gtg tac cgg gtg ccc gtg ctg ccg cgt ggt gag cac gac gat ctc gca gcc gca
arg gly val tyr arg val pro val leu pro arg gly glu his asp asp leu ala ala ala
241/81                                271/91
gtg tcg tgg act ttg ggg cgt ggc gtt atc tcg cat gag tcg gcc ttg gcg ctt cat gcc
val ser trp thr leu gly arg gly val ile ser his glu ser ala leu ala leu his ala
301/101                                331/111
ctc gct gac gtg aac ccg tcg cgc atc cat ctc acc gtc ccg cgc aac aac cat ccg cgt
leu ala asp val asn pro ser arg ile his leu thr val pro arg asn asn his pro arg
361/121                                391/131
gcg gcc ggg ggc gag ctg tac cga gtt cac cgc cgc gac ctc cag gca gcc cac gtc act
ala ala gly gly glu leu tyr arg val his arg arg asp leu gln ala ala his val thr
421/141                                451/151
tcg gtc gac gga ata ccc gtc acg acg gtt gcg cgc acc atc aaa gac tgc gtg aag acg
ser val asp gly ile pro val thr thr val ala arg thr ile lys asp cys val lys thr
481/161                                511/171
ggc acg gat cct tat cag ctt cgg gcc gcg atc gag cga gcc gaa gcc gag ggc acg ctt
gly thr asp pro tyr gln leu arg ala ala ile glu arg ala glu ala glu gly thr leu
541/181                                571/191
cgt cgt ggg tca gca gct gag cta cgc gct gcg ctc gat gag acc act gcc gga tta cgc
arg arg gly ser ala ala glu leu arg ala ala leu asp glu thr thr ala gly leu arg
601/201
gct cgg ccg aag cga gca tcg gcg tga
ala arg pro lys arg ala ser ala OPA

```

SEQ ID N° 33F

FIGURE 33F

```

1/1                                31/11
ATC CAA CCT GCT GGG CCT GCG CCT TCG AAT CGA CGG CCA GGC CAC CGC TCG CTG CCG GCA
ile gln pro ala gly pro ala pro ser asn arg arg pro gly his arg ser leu pro ala
61/21                                91/31
ACA ACA CCT GGA ATG GGG ACC TTT TCG GTG TTG CTG GTA ACC GGG ACA ACC GGC ACC ACG
thr thr pro gly met gly thr phe ser val leu leu val thr gly thr thr gly thr thr
121/41                                151/51
CCT CGG TCG AGA CGT ATC GCG GCA GCG TTG GCC CTG TCG TTG CTG ACA ATT ACC GCT GGC
pro arg ser arg arg ile ala ala ala leu ala leu ser leu leu thr ile thr ala gly
181/61                                211/71
CGC CGC ATA TTT GCC GCG CTG CCG CGG GCC GGA TC
arg arg ile phe ala ala leu pro arg ala gly

```

SEQ ID N° 34A

FIGURE 34A
FEUILLE DE REMPLACEMENT (REGLE 26)

105/185

```

1/1                               31/11
TCC AAC CTG CTG GGC CTG CGC CTT CGA ATC GAC GGC CAG GCC ACC GCT CGC TGC CGG CAA
ser asn leu leu gly leu arg leu arg ile asp gly gln ala thr ala arg cys arg gln
61/21                               91/31
CAA CAC CTG GAA TGG GGA CCT TTT CGG TGT TGC TGG TAA CCG GGA CAA CCG GCA CCA CGC
gln his leu glu trp gly pro phe arg cys cys trp OCH pro gly gln pro ala pro arg
121/41                               151/51
CTC GGT CGA GAC GTA TCG CGG CAG CGT TGG CCC TGT CGT TGC TGA CAA TTA CCG CTG GCC
leu gly arg asp val ser arg gln arg trp pro cys arg cys OPA gln leu pro leu ala
181/61                               211/71
GCC GCA TAT TTG CCG CGC TGC CGC GGG CCG GAT C
ala ala tyr leu pro arg cys arg gly pro asp

```

SEQ ID N° 34B

FIGURE 34B

```

1/1                               31/11
GAT CCA ACC TGC TGG GCC TGC GCC TTC GAA TCG ACG GCC AGG CCA CCG CTC GCT GCC GGC
asp pro thr cys trp ala cys ala phe glu ser thr ala arg pro pro leu ala ala gly
61/21                               91/31
AAC AAC ACC TGG AAT GGG GAC CTT TTC GGT GTT GCT GGT AAC CGG GAC AAC CGG CAC CAC
asn asn thr trp asn gly asp leu phe gly val ala gly asn arg asp asn arg his his
121/41                               151/51
GCC TCG GTC GAG ACG TAT CGC GGC AGC GTT GGC CCT GTC GTT GCT GAC AAT TAC CGC TGG
ala ser val glu thr tyr arg gly ser val gly pro val val ala asp asn tyr arg trp
181/61                               211/71
CCG CCG CAT ATT TGC CGC GCT GCC GCG GGC CGG ATC
pro pro his ile cys arg ala ala ala gly arg ile

```

SEQ ID N° 34C

FIGURE 34C

106/185

ORF d'après Cole et al. (Nature 393:537-544) contenant seq34A

```

1/1                               31/11
tag ccg cag ggc cct gcg gct agg cgc ggc cgg tgc cgt tgg ccg cgg cgg caa tcg atg
AMB pro gln gly pro ala ala arg arg gly arg cys arg trp pro arg arg gln ser met
61/21                               91/31
ttg cag cag tta caa cgc caa atg gag tct gag cgc atc gtc gag ttc gat cag ctc ggc
leu gln gln leu gln arg gln met glu ser glu arg ile val glu phe asp gln leu gly
121/41                               151/51
agg gga gac gtt gcg cag cga cgg atc caa cct gct ggg cct gcg cct tcg aat cga cgg
arg gly asp val ala gln arg arg ile gln pro ala gly pro ala pro ser asn arg arg
181/61                               211/71
cca ggc cac cgc tcg ctg ccg gca aca aca cct gga atg ggg acc ttt tcg gtg ttg ctg
pro gly his arg ser leu pro ala thr thr pro gly met gly thr phe ser val leu leu
241/81                               271/91
gta acc ggg aca acc ggc acc acg cct cgg tcg aga cgt atc gcg gca gcg ttg gcc ctg
val thr gly thr thr gly thr thr pro arg ser arg arg ile ala ala ala leu ala leu
301/101                               331/111
tcg ttg ctg aca att acc gct ggc cgc cgc ata ttt gcc gcg ctg ccg cgg gcc gga tcc
ser leu leu thr ile thr ala gly arg arg ile phe ala ala leu pro arg ala gly ser
361/121                               391/131
agg tcg acc tgc cag atc tca ccg cgc agc atc tac gcc gtt cgc tgc aaa ccg ccg act
arg ser thr cys gln ile ser pro arg ser ile tyr ala val arg cys lys pro pro thr
421/141                               451/151
gcg acg gca ggc cca ctc tct tgg cat gcg tcc aat gct gcg acg tcc tcg gta gac aag
ala thr ala gly pro leu ser trp his ala ser asn ala ala thr ser ser val asp lys
481/161                               511/171
ctc acg ctt ggc ttc atg ccg cag tcc tac cca tgt agt aac aga tag
leu thr leu gly phe met pro gln ser tyr pro cys ser asn arg AMB

```

SEQ ID N° 34F

FIGURE 34F

```

1/1                               31/11
CAG TCT GTC GGC AAG GAG GGA CGC ATG CCA CTC TCC GAT CAT GAG CAG CGG ATG CTT GAC
gln ser val gly lys glu gly arg met pro leu ser asp his glu gln arg met leu asp
61/21                               91/31
CAG ATC GAG AGC GCT CTC TAC GCC GAA GAT CCC AAG TTC GCA TCG AGT GTC CGT GGC GGG
gln ile glu ser ala leu tyr ala glu asp pro lys phe ala ser ser val arg gly gly
121/41                               151/51
GGC TTC CGC GCA CCG ACC GCG CGG CGG CGC CTG CAG GGC GCG GCG TTG TTC ATC ATC GGT
gly phe arg ala pro thr ala arg arg arg leu gln gly ala ala leu phe ile ile gly
181/61                               211/71
CTG GGG ATG TTG GTT TCC GGC GTG GCG TTC AAA GAG ACC ATG ATC GGA AGT TTC CCG ATA
leu gly met leu val ser gly val ala phe lys glu thr met ile gly ser phe pro ile
241/81                               271/91
CTC AGC GTT TTC GGT TTT GTC GTG ATG TTC GGT GGT GTG GTG TAT GCC ATC ACC GGT CCT
leu ser val phe gly phe val val met phe gly gly val val tyr ala ile thr gly pro
301/101                               331/111
CGG TTG TCC GGC AGG ATG GAT CGT GGC GGA TCG GCT GCT GGG GCT TCG CGC CAG CGT CGT
arg leu ser gly arg met asp arg gly gly ser ala ala gly ala ser arg gln arg arg
361/121                               391/131
ACC AAG GGG GCC GGG GGC TCA TTC ACC AGC CGT ATG GAA GAT C
thr lys gly ala gly gly ser phe thr ser arg met glu asp

```

SEQ ID N° 35A

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 35A

107/185

```

1/1                               31/11
GAC AGT CTG TCG GCA AGG AGG GAC GCA TGC CAC TCT CCG ATC ATG AGC AGC GGA TGC TTG
asp ser leu ser ala arg arg asp ala cys his ser pro ile met ser ser gly cys leu
61/21                               91/31
ACC AGA TCG AGA GCG CTC TCT ACG CCG AAG ATC CCA AGT TCG CAT CGA GTG TCC GTG GCG
thr arg ser arg ala leu ser thr pro lys ile pro ser ser his arg val ser val ala
121/41                               151/51
GGG GCT TCC GCG CAC CGA CCG CGC GGC GGC GCC TGC AGG GCG CGG CGT TGT TCA TCA TCG
gly ala ser ala his arg pro arg gly gly ala cys arg ala arg arg cys ser ser ser
181/61                               211/71
GTC TGG GGA TGT TGG TTT CCG GCG TGG CGT TCA AAG AGA CCA TGA TCG GAA GTT TCC CGA
val trp gly cys trp phe pro ala trp arg ser lys arg pro OPA ser glu val ser arg
241/81                               271/91
TAC TCA GCG TTT TCG GTT TTG TCG TGA TGT TCG GTG GTG TGG TGT ATG CCA TCA CCG GTC
tyr ser ala phe ser val leu ser OPA cys ser val val trp cys met pro ser pro val
301/101                               331/111
CTC GGT TGT CCG GCA GGA TGG ATC GTG GCG GAT CCG CTG CTG GGG CTT CGC GCC AGC GTC
leu gly cys pro ala gly trp ile val ala asp arg leu leu gly leu arg ala ser val
361/121                               391/131
GTA CCA AGG GGG CCG GGG GCT CAT TCA CCA GCC GTA TGG AAG ATC
val pro arg gly pro gly ala his ser pro ala val trp lys ile

```

SEQ ID N° 35B

FIGURE 35B

```

1/1                               31/11
ACA GTC TGT CCG CAA GGA GGG ACG CAT GCC ACT CTC CGA TCA TGA GCA GCG GAT GCT TGA
thr val cys arg gln gly gly thr his ala thr leu arg ser OPA ala ala asp ala OPA
61/21                               91/31
CCA GAT CGA GAG CGC TCT CTA CGC CGA AGA TCC CAA GTT CGC ATC GAG TGT CCG TGG CCG
pro asp arg glu arg ser leu arg arg arg ser gln val arg ile glu cys pro trp arg
121/41                               151/51
GGG CTT CCG CGC ACC GAC CGC GCG GCG GCG CCT GCA GGG CGC GGC GTT GTT CAT CAT CCG
gly leu pro arg thr asp arg ala ala ala pro ala gly arg gly val val his his arg
181/61                               211/71
TCT GGG GAT GTT GGT TTC CGG CGT GGC GTT CAA AGA GAC CAT GAT CGG AAG TTT CCC GAT
ser gly asp val gly phe arg arg gly val gln arg asp his asp arg lys phe pro asp
241/81                               271/91
ACT CAG CGT TTT CCG TTT TGT CGT GAT GTT CGG TGG TGT GGT GTA TGC CAT CAC CCG TCC
thr gln arg phe arg phe cys arg asp val arg trp cys gly val cys his his arg ser
301/101                               331/111
TCG GTT GTC CCG CAG GAT GGA TCG TGG CCG ATC GGC TGC TGG GGC TTC GCG CCA GCG TCG
ser val val arg gln asp gly ser trp arg ile gly cys trp gly phe ala pro ala ser
361/121                               391/131
TAC CAA GGG GGC CGG GGG CTC ATT CAC CAG CCG TAT GGA AGA TC
tyr gln gly gly arg gly leu ile his gln pro tyr gly arg

```

SEQ ID N° 35C

FIGURE 35C
FEUILLE DE REMPLACEMENT (REGLE 26)

108/185

séquence Rv2169c prédite par Cole et al. (Nature 393:537-544) et contenant partiellement seq35A

```

1/1                               31/11
atg cca ctc tcc gat cat gag cag cgg atg ctt gac cag atc gag agc gct ctc tac gcc
Met pro leu ser asp his glu gln arg met leu asp gln ile glu ser ala leu tyr ala
61/21                               91/31
gaa gat ccc aag ttc gca tcg agt gtc cgt ggc ggg ggc ttc cgc gca ccg acc gcg cgg
glu asp pro lys phe ala ser ser val arg gly gly gly phe arg ala pro thr ala arg
121/41                               151/51
cgg cgc ctg cag ggc gcg gcg ttg ttc atc atc ggt ctg ggg atg ttg gtt tcc ggc gtg
arg arg leu gln gly ala ala leu phe ile ile gly leu gly met leu val ser gly val
181/61                               211/71
gcg ttc aaa gag acc atg atc gga agt ttc ccg ata ctc agc gtt ttc ggt ttt gtc gtg
ala phe lys glu thr met ile gly ser phe pro ile leu ser val phe gly phe val val
241/81                               271/91
atg ttc ggt ggt gtg gtg tat gcc atc acc ggt cct cgg ttg tcc ggc agg atg gat cgt
met phe gly gly val val tyr ala ile thr gly pro arg leu ser gly arg met asp arg
301/101                               331/111
ggc gga tcg gct gct ggg gct tcg cgc cag cgt cgt acc aag ggg gcc ggg ggc tca ttc
gly gly ser ala ala gly ala ser arg gln arg arg thr lys gly ala gly gly ser phe
361/121                               391/131
acc agc cgt atg gaa gat cgg ttc cgg cgc cgc ttc gac gag taa
thr ser arg met glu asp arg phe arg arg arg phe asp glu OCH

```

SEQ ID N° 35D

FIGURE 35D

ORF d'après Cole et al. (Nature 393:537-544) et contenant Rv2169c

```

1/1                               31/11
tga cag tct gtc ggc aag gag gga cgc atg cca ctc tcc gat cat gag cag cgg atg ctt
OPA gln ser val gly lys glu gly arg met pro leu ser asp his glu gln arg met leu
61/21                               91/31
gac cag atc gag agc gct ctc tac gcc gaa gat ccc aag ttc gca tcg agt gtc cgt ggc
asp gln ile glu ser ala leu tyr ala glu asp pro lys phe ala ser ser val arg gly
121/41                               151/51
ggg ggc ttc cgc gca ccg acc gcg cgg cgg cgc ctg cag ggc gcg gcg ttg ttc atc atc
gly gly phe arg ala pro thr ala arg arg arg leu gln gly ala ala leu phe ile ile
181/61                               211/71
ggt ctg ggg atg ttg gtt tcc ggc gtg gcg ttc aaa gag acc atg atc gga agt ttc ccg
gly leu gly met leu val ser gly val ala phe lys glu thr met ile gly ser phe pro
241/81                               271/91
ata ctc agc gtt ttc ggt ttt gtc gtg atg ttc ggt ggt gtg gtg tat gcc atc acc ggt
ile leu ser val phe gly phe val val met phe gly gly val val tyr ala ile thr gly
301/101                               331/111
cct cgg ttg tcc ggc agg atg gat cgt ggc gga tcg gct gct ggg gct tcg cgc cag cgt
pro arg leu ser gly arg met asp arg gly gly ser ala ala gly ala ser arg gln arg
361/121                               391/131
cgt acc aag ggg gcc ggg ggc tca ttc acc agc cgt atg gaa gat cgg ttc cgg cgc cgc
arg thr lys gly ala gly gly ser phe thr ser arg met glu asp arg phe arg arg arg
421/141
ttc gac gag taa
phe asp glu OCH

```

SEQ ID 35F

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 35F

109/185

```

1/1                                31/11
GAC CTG GGA CGA AGA CGA CGG CAG CAG CCG CAA TCA GAT CTA CCC GGT CCT GGT CAA CGT
asp leu gly arg arg arg arg gln gln pro gln ser asp leu pro gly pro gly gln arg
61/21                                91/31
CAA TGG ACA CCC GAC TAC GGT GCG CCT GCG CGG CTC GAC AAT GCG CGG TTC CTG TTG CCC
gln trp thr pro asp tyr gly ala pro ala arg leu asp asn ala arg phe leu leu pro
121/41                                151/51
GTG GTC GGA GTG CCA CCC GAC CAG GCC ACC GAC TTC GGC TCC GCT GTT GCA CCA GAA ACG
val val gly val pro pro asp gln ala thr asp phe gly ser ala val ala pro glu thr
181/61                                211/71
ACG GCG CCG GTC TGG ATC ACC ATG CTG TGG CCG CTG GCC GAC CGG CCC CGG TTG GCC CCC
thr ala pro val trp ile thr met leu trp pro leu ala asp arg pro arg leu ala pro
241/81                                271/91
GGG GCA CCC GGT GGC ACC GTT CCC GTC CGG CTG GTC GAC GAC GAC CTG GCA AAC TCG CTG
gly ala pro gly gly thr val pro val arg leu val asp asp asp leu ala asn ser leu
301/101                                331/111
GCC AAC GGC GGC CGG CTG GAC ATC CTC CTG TCG GCG GCC GAG TTC GCC ACC AAC CGG GAA
ala asn gly gly arg leu asp ile leu leu ser ala ala glu phe ala thr asn arg glu
361/121                                391/131
GTC GAC CCC GAC GGC GCC GTC GGC CGA GCG CTG TGC CTG GCC ATC GAC CCA GAT C
val asp pro asp gly ala val gly arg ala leu cys leu ala ile asp pro asp

```

SEQ ID N° 36A

FIGURE 36A

```

1/1                                31/11
ACC TGG GAC GAA GAC GAC GGC AGC AGC CGC AAT CAG ATC TAC CCG GTC CTG GTC AAC GTC
thr trp asp glu asp asp gly ser ser arg asn gln ile tyr pro val leu val asn val
61/21                                91/31
AAT GGA CAC CCG ACT ACG GTG GCG CTG CGC GGC TCG ACA ATG CGC GGT TCC TGT TGC CCG
asn gly his pro thr thr val arg leu arg gly ser thr met arg gly ser cys cys pro
121/41                                151/51
TGG TCG GAG TGC CAC CCG ACC AGG CCA CCG ACT TCG GCT CCG CTG TTG CAC CAG AAA CGA
trp ser glu cys his pro thr arg pro pro thr ser ala pro leu leu his gln lys arg
181/61                                211/71
CGG CGC CGG TCT GGA TCA CCA TGC TGT GGC CGC TGG CCG ACC GGC CCC GGT TGG CCC CCG
arg arg arg ser gly ser pro cys cys gly arg trp pro thr gly pro gly trp pro pro
241/81                                271/91
GGG CAC CCG GTG GCA CCG TTC CCG TCC GGC TGG TCG ACG ACG ACC TGG CAA ACT CGC TGG
gly his pro val ala pro phe pro ser gly trp ser thr thr thr trp gln thr arg trp
301/101                                331/111
CCA ACG GCG GCC GGC TGG ACA TCC TCC TGT CGG CGG CCG AGT TCG CCA CCA ACC GGG AAG
pro thr ala ala gly trp thr ser ser cys arg arg pro ser ser pro pro thr gly lys
361/121                                391/131
TCG ACC CCG ACG GCG CCG TCG GCC GAG CGC TGT GCC TGG CCA TCG ACC CAG ATC
ser thr pro thr ala pro ser ala glu arg cys ala trp pro ser thr gln ile

```

SEQ ID N° 36B

FEUILLE DE REMPLACEMENT (REGLE 26)

110/185

```

1/1                               31/11
CCT GGG ACG AAG ACG ACG GCA GCA GCC GCA ATC AGA TCT ACC CGG TCC TGG TCA ACG TCA
pro gly thr lys thr thr ala ala ala ala ile arg ser thr arg ser trp ser thr ser
61/21                               91/31
ATG GAC ACC CGA CTA CGG TGC GCC TGC GCG GCT CGA CAA TGC GCG GTT CCT GTT GCC CGT
met asp thr arg leu arg cys ala cys ala ala arg gln cys ala val pro val ala arg
121/41                               151/51
GGT CGG AGT GCC ACC CGA CCA GGC CAC CGA CTT CGG CTC CGC TGT TGC ACC AGA AAC GAC
gly arg ser ala thr arg pro gly his arg leu arg leu arg cys cys thr arg asn asp
181/61                               211/71
GGC GCC GGT CTG GAT CAC CAT GCT GTG GCC GCT GGC CGA CCG GCC CCG GTT GGC CCC CGG
gly ala gly leu asp his his ala val ala ala gly arg pro ala pro val gly pro arg
241/81                               271/91
GGC ACC CGG TGG CAC CGT TCC CGT CCG GCT GGT CGA CGA CGA CCT GGC AAA CTC GCT GGC
gly thr arg trp his arg ser arg pro ala gly arg arg arg pro gly lys leu ala gly
301/101                               331/111
CAA CGG CGG CCG GCT GGA CAT CCT CCT GTC GGC GGC CGA GTT CGC CAC CAA CCG GGA AGT
gln arg arg pro ala gly his pro pro val gly gly arg val arg his gln pro gly ser
361/121                               391/131
CGA CCC CGA CGG CGC CGT CGG CCG AGC GCT GTG CCT GGC CAT CGA CCC AGA TC
arg pro arg arg arg arg arg pro ser ala val pro gly his arg pro arg

```

SEQ ID N° 36 C

FIGURE 36C

Séquence codante Rv3909 prédite par Cole et al., 1998 (Nature 393 537-544)
contenant Seq 36A

```

1/1                               31/11
GTG ACC GCA CTG CAA CTC GGC TGG GCC GCT TTG GCG CGC GTC ACC TCA GCG ATC GGC GTC
met thr ala leu gln leu gly trp ala ala leu ala arg val thr ser ala ile gly val
61/21                               91/31
GTG GCC GGC CTC GGG ATG GCG CTC ACG GTA CCG TCG GCG GCA CCG CAC GCG CTC GCA GGC
val ala gly leu gly met ala leu thr val pro ser ala ala pro his ala leu ala gly
121/41                               151/51
GAG CCC AGC CCG ACG CCT TTT GTC CAG GTC CGC ATC GAT CAG GTG ACC CCG GAC GTG GTG
glu pro ser pro thr pro phe val gln val arg ile asp gln val thr pro asp val val
181/61                               211/71
ACC ACT TCC AGC GAA CCC CAT GTC ACC GTC AGC GGA ACG GTG ACC AAT ACC GGT GAC CGC
thr thr ser ser glu pro his val thr val ser gly thr val thr asn thr gly asp arg
241/81                               271/91
CCA GTC CGC GAT GTG ATG GTC CGG CTT GAG CAC GCC GCC GCG GTC ACG TCG TCA ACG GCG
pro val arg asp val met val arg leu glu his ala ala ala val thr ser ser thr ala
301/101                               331/111
TTA CGC ACC TCG CTC GAC GGC GGC ACC GAC CAG TAC CAG CCG GCC GCG GAC TTC CTC ACG
leu arg thr ser leu asp gly gly thr asp gln tyr gln pro ala ala asp phe leu thr

```

SEQ ID N° 36D

FIGURE 36D

FEUILLE DE REMPLACEMENT (REGLE 26)

111/185

361/121
 GTC GCC CCC GAA CTA GAC CGC GGG CAA GAG GCC GGC TTT ACC CTC TCG GCC CCG CTG CGC
 val ala pro glu leu asp arg gly gln glu ala gly phe thr leu ser ala pro leu arg
 421/141
 TCG CTG ACC AGG CCG TCG TTG GCC GTC AAC CAG CCC GGG ATC TAC CCG GTC CTG GTC AAC
 ser leu thr arg pro ser leu ala val asn gln pro gly ile tyr pro val leu val asn
 481/161
 GTC AAT GGG ACA CCC GAC TAC GGT GCG CCT GCG CGG CTC GAC AAT GCG CGG TTC CTG TTG
 val asn gly thr pro asp tyr gly ala pro ala arg leu asp asn ala arg phe leu leu
 541/181
 CCC GTG GTC GGA GTG CCA CCC GAC CAG GCC ACC GAC TTC GGC TCC GCT GTT GCA CCA GAA
 pro val val gly val pro pro asp gln ala thr asp phe gly ser ala val ala pro glu
 601/201
 ACG ACG GCG CCG GTC TGG ATC ACC ATG CTG TGG CCG CTG GCC GAC CGG CCC CGG TTG GCC
 thr thr ala pro val trp ile thr met leu trp pro leu ala asp arg pro arg leu ala
 661/221
 CCC GGG GCA CCC GGT GGC ACC GTT CCC GTC CGG CTG GTC GAC GAC GAC CTG GCA AAC TCG
 pro gly ala pro gly gly thr val pro val arg leu val asp asp asp leu ala asn ser
 721/241
 CTG GCC AAC GGC GGC CGG CTG GAC ATC CTC CTG TCG GCG GCC GAG TTC GCC ACC AAC CGG
 leu ala asn gly gly arg leu asp ile leu leu ser ala ala glu phe ala thr asn arg
 781/261
 GAA GTC GAC CCC GAC GGC GCC GTC GGC CGA GCG CTG TGC CTG GCC ATC GAC CCA GAT CTA
 glu val asp pro asp gly ala val gly arg ala leu cys leu ala ile asp pro asp leu
 841/281
 CTC ATC ACC GTC AAT GCG ATG ACC GGC GGC TAC GTC GTG TCC GAC TCG CCC GAC GGG GCC
 leu ile thr val asn ala met thr gly gly tyr val val ser asp ser pro asp gly ala
 901/301
 GCT CAA CTA CCG GGC ACC CCG ACC CAC CCG GGC ACC GGC CAG GCC GCC GCA TCC AGC TGG
 ala gln leu pro gly thr pro thr his pro gly thr gly gln ala ala ala ser ser trp
 961/321
 CTG GAT CGA TTG CCG ACG CTA GTC CAC CGG ACA TGC GTG ACG CCG CTG CCT TTT GCC CAA
 leu asp arg leu arg thr leu val his arg thr cys val thr pro leu pro phe ala gln
 1021/341
 GCC GAC CTG GAT GCT TTG CAG CGG GTT AAT GAT CCG AGG CTG AGC GCG ATC GCA ACC ATC
 ala asp leu asp ala leu gln arg val asn asp pro arg leu ser ala ile ala thr ile
 1081/361
 AGC CCC GCC GAC ATC GTC GAC CGC ATC CTG GAT GTC AGC TCC ACC CGC GGC GCA ACC GTG
 ser pro ala asp ile val asp arg ile leu asp val ser ser thr arg gly ala thr val
 1141/381
 CTG CCC GAC GGC CCG TTG ACC GGC CGG GCG AAC TTG CTC AGC ACC CAC GGC AAC ACG
 leu pro asp gly pro leu thr gly arg ala ile asn leu leu ser thr his gly asn thr
 1201/401
 GTT GCC GTC GCG GCC GCC GAT TTT AGC CCC GAG GAA CAG CAG GGT TCG TCC CAG ATC GGC
 val ala val ala ala ala asp phe ser pro glu glu gln gln gly ser ser gln ile gly
 1261/421
 TCC GCG CTC TTA CCC GCT ACC GCG CCC CGG CGG TTG TCC CCG CGG GTG GTA GCG GCG CCG
 ser ala leu leu pro ala thr ala pro arg arg leu ser pro arg val val ala ala pro
 1321/441
 TTT GAT CCC GCG GTC GGG GCC GCG CTG GCC GCC GCG GGA ACA AAC CCG ACC GTT CCT ACC
 phe asp pro ala val gly ala ala leu ala ala ala gly thr asn pro thr val pro thr
 1381/461
 TAT CTA GAT CCC TCG TTG TTC GTT CGG ATC GCG CAT GAA TCG ATC ACC GCG CGC CGC CAG
 tyr leu asp pro ser leu phe val arg ile ala his glu ser ile thr ala arg arg gln

SEQ ID N° 36D(suite 1)

FEUILLE DE REMPLACEMENT (REGLE 26)

112/185

1441/481
 GAC GCC TTG GGC GCA ATG CTG TGG CGC AGC TTG GAG CCG AAT GCC GCG CCC CGT ACC CAA
 asp ala leu gly ala met leu trp arg ser leu glu pro asn ala ala pro arg thr gln
 1501/501
 ATC CTG GTG CCG CCG GCG TCG TGG AGC CTG GCC AGC GAC GAC GCG CAG GTC ATC CTG ACC
 ile leu val pro pro ala ser trp ser leu ala ser asp asp ala gln val ile leu thr
 1561/521
 GCG CTG GCC ACC GCC ATC CGG TCT GGC CTG GCC GTG CCG CGA CCA CTA CCG GCG GTG ATC
 ala leu ala thr ala ile arg ser gly leu ala val pro arg pro leu pro ala val ile
 1621/541
 GCT GAC GCC GCG GCC CGC ACC GAG CCA CCG GAA CCC CCG GGC GCT TAC AGC GCC GCT CGC
 ala asp ala ala ala arg thr glu pro pro glu pro pro gly ala tyr ser ala ala arg
 1681/561
 GGC CGG TTC AAT GAC GAC ATC ACC ACG CAG ATC GGC GGG CAG GTT GCC CGG CTA TGG AAG
 gly arg phe asn asp asp ile thr thr gln ile gly gly gln val ala arg leu trp lys
 1741/581
 CTG ACC TCG GCG TTG ACC ATC GAT GAC CGC ACC GGG CTG ACC GGC GTG CAG TAC ACC GCA
 leu thr ser ala leu thr ile asp asp arg thr gly leu thr gly val gln tyr thr ala
 1801/601
 CCA CTA CGC GAG GAC ATG TTG CGC GCG CTG AGC CAA TCG CTA CCA CCC GAT ACC CGC AAC
 pro leu arg glu asp met leu arg ala leu ser gln ser leu pro pro asp thr arg asn
 1861/621
 GGG CTG GCC CAG CAG CGG CTG GCC GTC GTT GGA AAG ACG ATC GAC GAT CTT TTC GGC GCG
 gly leu ala gln gln arg leu ala val val gly lys thr ile asp asp leu phe gly ala
 1921/641
 GTG ACC ATC GTC AAC CCG GGC GGC TCC TAC ACT CTG GCC ACC GAG CAC AGT CCG CTG CCG
 val thr ile val asn pro gly gly ser tyr thr leu ala thr glu his ser pro leu pro
 1981/661
 TTG GCG CTG CAT AAT GGC CTC GCC GTG CCA ATC CGG GTC CCG CTA CAG GTC GAT GCT CCG
 leu ala leu his asn gly leu ala val pro ile arg val arg leu gln val asp ala pro
 2041/681
 CCC GGG ATG ACG GTG GCC GAT GTC GGT CAG ATC GAG CTA CCG CCC GGG TAC CTG CCG CTA
 pro gly met thr val ala asp val gly gln ile glu leu pro pro gly tyr leu pro leu
 2101/701
 CGA GTA CCA ATC GAG GTG AAC TTC ACA CAG CGG GTT GCC GTC GAC GTG TCG CTG CCG ACC
 arg val pro ile glu val asn phe thr gln arg val ala val asp val ser leu arg thr
 2161/721
 CCC GAC GGC GTC GCG CTG GGT GAA CCG GTG CGG TTG TCG GTG CAC TCC AAC GCC TAC GGC
 pro asp gly val ala leu gly glu pro val arg leu ser val his ser asn ala tyr gly
 2221/741
 AAG GTG TTG TTC GCG ATC ACG CTA TCC GCT GCG GCC GTG CTG GTA ACG CTG GCG GGC CGG
 lys val leu phe ala ile thr leu ser ala ala ala val leu val thr leu ala gly arg
 2281/761
 CGC CTT TGG CAC CGG TTC CGT GGC CAG CCT GAT CGC GCC GAC CTG GAT CGC CCC GAC CTG
 arg leu trp his arg phe arg gly gln pro asp arg ala asp leu asp arg pro asp leu
 2341/781
 CCT ACC GGC AAA CAC GCC CCG CAG CGC CGT GCC GTA GCC AGT CGG GAT GAC GAA AAG CAC
 pro thr gly lys his ala pro gln arg arg ala val ala ser arg asp asp glu lys his
 2401/801
 CGG GTA TGA
 arg val OPA

SEQ ID N° 36D (suite 2)

FIGURE 36D (suite 2)

FEUILLE DE REMPLACEMENT (REGLE 26)

113/185

ORF d'après Cole et al., 1998 (Nature 393 537-544) et contenant Rv 3909.

```

1/1                                31/11
TGA CTC AGC ACC GGG TCA GCA CAA CGG TCC CGG GCC GGG GCC GTG ACC GCA CTG CAA CTC
OPA leu ser thr gly ser ala gln arg ser arg ala gly ala val thr ala leu gln leu
61/21                                91/31
GGC TGG GCC GCT TTG GCG CGC GTC ACC TCA GCG ATC GGC GTC GTG GCC GGC CTC GGG ATG
gly trp ala ala leu ala arg val thr ser ala ile gly val val ala gly leu gly met
121/41                                151/51
GCG CTC ACG GTA CCG TCG GCG GCA CCG CAC GCG CTC GCA GGC GAG CCC AGC CCG ACG CCT
ala leu thr val pro ser ala ala pro his ala leu ala gly glu pro ser pro thr pro
181/61                                211/71
TTT GTC CAG GTC CGC ATC GAT CAG GTG ACC CCG GAC GTG GTG ACC ACT TCC AGC GAA CCC
phe val gln val arg ile asp gln val thr pro asp val val thr thr ser ser glu pro
241/81                                271/91
CAT GTC ACC GTC AGC GGA ACG GTG ACC AAT ACC GGT GAC CGC CCA GTC CGC GAT GTG ATG
his val thr val ser gly thr val thr asn thr gly asp arg pro val arg asp val met
301/101                                331/111
GTC CGG CTT GAG CAC GCC GCC GCG GTC ACG TCG TCA ACG GCG TTA CGC ACC TCG CTC GAC
val arg leu glu his ala ala ala val thr ser ser thr ala leu arg thr ser leu asp
361/121                                391/131
GGC GGC ACC GAC CAG TAC CAG CCG GCC GCG GAC TTC CTC ACG GTC GCC CCC GAA CTA GAC
gly gly thr asp gln tyr gln pro ala ala asp phe leu thr val ala pro glu leu asp
421/141                                451/151
CGC GGG CAA GAG GCC GGC TTT ACC CTC TCG GCC CCG CTG CGC TCG CTG ACC AGG CCG TCG
arg gly gln glu ala gly phe thr leu ser ala pro leu arg ser leu thr arg pro ser
481/161                                511/171
TTG GCC GTC AAC CAG CCC GGG ATC TAC CCG GTC CTG GTC AAC GTC AAT GGG ACA CCC GAC
leu ala val asn gln pro gly ile tyr pro val leu val asn val asn gly thr pro asp
541/181                                571/191
TAC GGT GCG CCT GCG CGG CTC GAC AAT GCG CCG TTC CTG TTG CCC GTG GTC GGA GTG CCA
tyr gly ala pro ala arg leu asp asn ala arg phe leu leu pro val val gly val pro
601/201                                631/211
CCC GAC CAG GCC ACC GAC TTC GGC TCC GCT GTT GCA CCA GAA ACG ACG GCG CCG GTC TGG
pro asp gln ala thr asp phe gly ser ala val ala pro glu thr thr ala pro val trp
661/221                                691/231
ATC ACC ATG CTG TGG CCG CTG GCC GAC CGG CCC CGG TTG GCC CCC GGG GCA CCC GGT GGC
ile thr met leu trp pro leu ala asp arg pro arg leu ala pro gly ala pro gly gly
721/241                                751/251
ACC GTT CCC GTC CGG CTG GTC GAC GAC GAC CTG GCA AAC TCG CTG GCC AAC GGC GGC CGG
thr val pro val arg leu val asp asp asp leu ala asn ser leu ala asn gly gly arg
781/261                                811/271
CTG GAC ATC CTC CTG TCG GCG GCC GAG TTC GCC ACC AAC CGG GAA GTC GAC CCC GAC GGC
leu asp ile leu leu ser ala ala glu phe ala thr asn arg glu val asp pro asp gly
841/281                                871/291
GCC GTC GGC CGA GCG CTG TGC CTG GCC ATC GAC CCA GAT CTA CTC ATC ACC GTC AAT GCG
ala val gly arg ala leu cys leu ala ile asp pro asp leu leu ile thr val asn ala
901/301                                931/311
ATG ACC GGC GGC TAC GTC GTG TCC GAC TCG CCC GAC GGG GCC GCT CAA CTA CCG GGC ACC
met thr gly gly tyr val val ser asp ser pro asp gly ala ala gln leu pro gly thr
961/321                                991/331
CCG ACC CAC CCG GGC ACC GGC CAG GCC GCC GCA TCC AGC TGG CTG GAT CGA TTG CGG ACG
pro thr his pro gly thr gly gln ala ala ala ser ser trp leu asp arg leu arg thr

```

SEQ ID N° 36F

FEUILLE DE REMPLACEMENT (REGLE 26)

114/185

1021/341
 CTA GTC CAC CGG ACA TGC GTG ACG CCG CTG CCT TTT GCC CAA GCC GAC CTG GAT GCT TTG
 leu val his arg thr cys val thr pro leu pro phe ala gln ala asp leu asp ala leu
 1081/361
 CAG CGG GTT AAT GAT CCG AGG CTG AGC GCG ATC GCA ACC ATC AGC CCC GCC GAC ATC GTC
 gln arg val asn asp pro arg leu ser ala ile ala thr ile ser pro ala asp ile val
 1141/381
 GAC CGC ATC CTG GAT GTC AGC TCC ACC CCG GGC GCA ACC GTG CTG CCC GAC GGC CCG TTG
 asp arg ile leu asp val ser ser thr arg gly ala thr val leu pro asp gly pro leu
 1201/401
 ACC GGC CGG GCG ATC AAC TTG CTC AGC ACC CAC GGC AAC ACG GTT GCC GTC GCG GCC GCC
 thr gly arg ala ile asn leu leu ser thr his gly asn thr val ala val ala ala ala
 1261/421
 GAT TTT AGC CCC GAG GAA CAG CAG GGT TCG TCC CAG ATC GGC TCC GCG CTC TTA CCC GCT
 asp phe ser pro glu glu gln gln gly ser ser gln ile gly ser ala leu leu pro ala
 1321/441
 ACC GCG CCC CGG CGG TTG TCC CCG CGG GTG GTA GCG GCG CCG TTT GAT CCC GCG GTC GGG
 thr ala pro arg arg leu ser pro arg val val ala ala pro phe asp pro ala val gly
 1381/461
 GCC GCG CTG GCC GCC GCG GGA ACA AAC CCG ACC GTT CCT ACC TAT CTA GAT CCC TCG TTG
 ala ala leu ala ala ala gly thr asn pro thr val pro thr tyr leu asp pro ser leu
 1441/481
 TTC GTT CGG ATC GCG CAT GAA TCG ATC ACC GCG CGC CGC CAG GAC GCC TTG GGC GCA ATG
 phe val arg ile ala his glu ser ile thr ala arg arg gln asp ala leu gly ala met
 1501/501
 CTG TGG CGC AGC TTG GAG CCG AAT GCC GCG CCC CGT ACC CAA ATC CTG GTG CCG CCG GCG
 leu trp arg ser leu glu pro asn ala ala pro arg thr gln ile leu val pro pro ala
 1561/521
 TCG TGG AGC CTG GCC AGC GAC GAC GCG CAG GTC ATC CTG ACC GCG CTG GCC ACC GCC ATC
 ser trp ser leu ala ser asp asp ala gln val ile leu thr ala leu ala thr ala ile
 1621/541
 CGG TCT GGC CTG GCC GTG CCG CGA CCA CTA CCG GCG GTG ATC GCT GAC GCC GCG GCC CGC
 arg ser gly leu ala val pro arg pro leu pro ala val ile ala asp ala ala ala arg
 1681/561
 ACC GAG CCA CCG GAA CCC CCG GGC GCT TAC AGC GCC GCT CGC GGC CGG TTC AAT GAC GAC
 thr glu pro pro glu pro pro gly ala tyr ser ala ala arg gly arg phe asn asp asp
 1741/581
 ATC ACC ACG CAG ATC GGC GGC CAG GTT GCC CGG CTA TGG AAG CTG ACC TCG GCG TTG ACC
 ile thr thr gln ile gly gly gln val ala arg leu trp lys leu thr ser ala leu thr
 1801/601
 ATC GAT GAC CGC ACC GGC CTG ACC GGC GTG CAG TAC ACC GCA CCA CTA CGC GAG GAC ATG
 ile asp asp arg thr gly leu thr gly val gln tyr thr ala pro leu arg glu asp met
 1861/621
 TTG CGC GCG CTG AGC CAA TCG CTA CCA CCC GAT ACC CGC AAC GGC CTG GCC CAG CAG CGG
 leu arg ala leu ser gln ser leu pro pro asp thr arg asn gly leu ala gln gln arg
 1921/641
 CTG GCC GTC GTT GGA AAG ACG ATC GAC GAT CTT TTC GGC GCG GTG ACC ATC GTC AAC CCG
 leu ala val val gly lys thr ile asp asp leu phe gly ala val thr ile val asn pro
 1981/661
 GGC GGC TCC TAC ACT CTG GCC ACC GAG CAC AGT CCG CTG CCG TTG GCG CTG CAT AAT GGC
 gly gly ser tyr thr leu ala thr glu his ser pro leu pro leu ala leu his asn gly

SEQ ID 36F (suite 1)

FIGURE 36F (suite 1)

FEUILLE DE REMPLACEMENT (REGLE 26)

115/185

2041/681
 CTC GCC GTG CCA ATC CGG GTC CGG CTA CAG GTC GAT GCT CCG CCC GGG ATG ACG GTG GCC
 leu ala val pro ile arg val arg leu gln val asp ala pro pro gly met thr val ala
 2101/701
 GAT GTC GGT CAG ATC GAG CTA CCG CCC GGG TAC CTG CCG CTA CGA GTA CCA ATC GAG GTG
 asp val gly gln ile glu leu pro pro gly tyr leu pro leu arg val pro ile glu val
 2161/721
 AAC TTC ACA CAG CGG GTT GCC GTC GAC GTG TCG CTG CCG ACC CCC GAC GGC GTC GCG CTG
 asn phe thr gln arg val ala val asp val ser leu arg thr pro asp gly val ala leu
 2221/741
 GGT GAA CCG GTG CGG TTG TCG GTG CAC TCC AAC GCC TAC GGC AAG GTG TTG TTC GCG ATC
 gly glu pro val arg leu ser val his ser asn ala tyr gly lys val leu phe ala ile
 2281/761
 ACG CTA TCC GCT GCG GCC GTG CTG GTA ACG CTG GCG GGC CCG CGC CTT TGG CAC CGG TTC
 thr leu ser ala ala ala val leu val thr leu ala gly arg arg leu trp his arg phe
 2341/781
 CGT GGC CAG CCT GAT CGC GCC GAC CTG GAT CGC CCC GAC CTG CCT ACC GGC AAA CAC GCC
 arg gly gln pro asp arg ala asp leu asp arg pro asp leu pro thr gly lys his ala
 2401/801
 CCG CAG CGC CGT GCC GTA GCC AGT CGG GAT GAC GAA AAG CAC CGG GTA TGA
 pro gln arg arg ala val ala ser arg asp asp glu lys his arg val OPA

SEQ ID 36F (suite 2)

FIGURE 36F (suite 2)

1/1
 ATC CGC GCG TTG GCG TCG CAT CCG AAC ATC GTC GGA GTC AAG GAC GCC AAA GCC GAC CTG
 ile arg ala leu ala ser his pro asn ile val gly val lys asp ala lys ala asp leu
 61/21
 CAC AGC GGC GCC CAA ATC ATG GCC GAC ACC GGA CTG GCC TAC TAT TCC GGC GAC GAC GCG
 his ser gly ala gln ile met ala asp thr gly leu ala tyr tyr ser gly asp asp ala
 121/41
 CTC AAC CTG CCC TGG CTG GCC ATG GGC GCC ACG GGC TTC ATC AGC GTG ATT GCC CAC CTG
 leu asn leu pro trp leu ala met gly ala thr gly phe ile ser val ile ala his leu
 181/61
 GCA GCC GGG CAG CTT CGA GAG TTG TTG TCC GCC TTC GGT TCT GGG GAT ATC GCC ACC GCC
 ala ala gly gln leu arg glu leu leu ser ala phe gly ser gly asp ile ala thr ala
 241/81
 CGC AAG ATC
 arg lys ile

SEQ ID N° 37A

FIGURE 37A

116/185

1/1 31/11
 GAT CCG CGC GTT GGC GTC GCA TCC GAA CAT CGT CGG AGT CAA GGA CGC CAA AGC CGA CCT
 asp pro arg val gly val ala ser glu his arg arg ser gln gly arg gln ser arg pro
 61/21 91/31
 GCA CAG CGG CGC CCA AAT CAT GGC CGA CAC CGG ACT GGC CTA CTA TTC CGG CGA CGA CGC
 ala gln arg arg pro asn his gly arg his arg thr gly leu leu phe arg arg arg arg
 121/41 151/51
 GCT CAA CCT GCC CTG GCT GGC CAT GGG CGC CAC GGG CTT CAT CAG CGT GAT TGC CCA CCT
 ala gln pro ala leu ala gly his gly arg his gly leu his gln arg asp cys pro pro
 181/61 211/71
 GGC AGC CGG GCA GCT TCG AGA GTT GTT GTC CGC CTT CGG TTC TGG GGA TAT CGC CAC CGC
 gly ser arg ala ala ser arg val val val arg leu arg phe trp gly tyr arg his arg
 241/81
 CCG CAA GAT C
 pro gln asp

SEQ ID N° 37B

FIGURE 37B

1/1 31/11
 TCC GCG CGT TGG CGT CGC ATC CGA ACA TCG TCG GAG TCA AGG ACG CCA AAG CCG ACC TGC
 ser ala arg trp arg arg ile arg thr ser ser glu ser arg thr pro lys pro thr cys
 61/21 91/31
 ACA GCG GCG CCC AAA TCA TGG CCG ACA CCG GAC TGG CCT ACT ATT CCG GCG ACG ACG CGC
 thr ala ala pro lys ser trp pro thr pro asp trp pro thr ile pro ala thr thr arg
 121/41 151/51
 TCA ACC TGC CCT GGC TGG CCA TGG GCG CCA CGG GCT TCA TCA GCG TGA TTG CCC ACC TGG
 ser thr cys pro gly trp pro trp ala pro arg ala ser ser ala OPA leu pro thr trp
 181/61 211/71
 CAG CCG GGC AGC TTC GAG AGT TGT TGT CCG CCT TCG GTT CTG GGG ATA TCG CCA CCG CCC
 gln pro gly ser phe glu ser cys cys pro pro ser val leu gly ile ser pro pro pro
 241/81
 GCA AGA TC
 ala arg

SEQ ID N° 37C

FIGURE 37C

117/185

Séquence codante Rv2753c prédite par Cole et al., 1998 (Nature 393 537-544)
contenant Seq 37A

```

1/1                               31/11
GTG ACC ACC GTC GGA TTC GAC GTC GCA GCG CGC CTA GGA ACC CTG CTG ACC GCG ATG GTG
val thr thr val gly phe asp val ala ala arg leu gly thr leu leu thr ala met val
61/21                               91/31
ACA CCG TTT AGC GGC GAT GGC TCC CTG GAC ACC GCC ACC GCG GCG CGG CTG GCC AAC CAC
thr pro phe ser gly asp gly ser leu asp thr ala thr ala ala arg leu ala asn his
121/41                               151/51
CTG GTC GAT CAG GGG TGC GAC GGT CTG GTG GTC TCG GGC ACC ACC GGC GAG TCG CCG ACC
leu val asp gln gly cys asp gly leu val val ser gly thr thr gly glu ser pro thr
181/61                               211/71
ACC ACC GAC GGG GAG AAA ATC GAG CTG CTG CGG GCC GTC TTG GAA GCG GTG GGG GAC CGG
thr thr asp gly glu lys ile glu leu leu arg ala val leu glu ala val gly asp arg
241/81                               271/91
GCC CGT GTT ATC GCC GGT GCC GGC ACC TAT GAC ACC GCG CAC AGC ATC CGG CTG GCC AAG
ala arg val ile ala gly ala gly thr tyr asp thr ala his ser ile arg leu ala lys
301/101                             331/111
GCT TGT GCG GCC GAG GGT GCG CAC GGG CTG CTG GTG GTC ACG CCC TAC TAT TCC AAG CCG
ala cys ala ala glu gly ala his gly leu leu val val thr pro tyr tyr ser lys pro
361/121                             391/131
CCG CAG CGG GGG CTG CAA GCC CAT TTC ACC GCC GTC GCC GAC GCG ACC GAG CTG CCG ATG
pro gln arg gly leu gln ala his phe thr ala val ala asp ala thr glu leu pro met
421/141                             451/151
CTG CTC TAT GAC ATC CCG GGG CGG TCG GCG GTG CCG ATC GAG CCC GAC ACG ATC CGC GCG
leu leu tyr asp ile pro gly arg ser ala val pro ile glu pro asp thr ile arg ala
481/161                             511/171
TTG GCG TCG CAT CCG AAC ATC GTC GGA GTC AAG GAC GCC AAA GCC GAC CTG CAC AGC GGC
leu ala ser his pro asn ile val gly val lys asp ala lys ala asp leu his ser gly
541/181                             571/191
GCC CAA ATC ATG GCC GAC ACC GGA CTG GCC TAC TAT TCC GGC GAC GAC GCG CTC AAC CTG
ala gln ile met ala asp thr gly leu ala tyr tyr ser gly asp asp ala leu asn leu
601/201                             631/211
CCC TGG CTG GCC ATG GGC GCC ACG GGC TTC ATC AGC GTG ATT GCC CAC CTG GCA GCC GGG
pro trp leu ala met gly ala thr gly phe ile ser val ile ala his leu ala ala gly
661/221                             691/231
CAG CTT CGA GAG TTG TTG TCC GCC TTC GGT TCT GGG GAT ATC GCC ACC GCC CGC AAG ATC
gln leu arg glu leu leu ser ala phe gly ser gly asp ile ala thr ala arg lys ile
721/241                             751/251
AAC ATT GCG GTC GCC CCG CTG TGC AAC GCG ATG AGC CGC CTG GGT GGG GTG ACG TTG TCC
asn ile ala val ala pro leu cys asn ala met ser arg leu gly gly val thr leu ser
781/261                             811/271
AAG GCG GGC TTG CGG CTG CAG GGC ATC GAC GTC GGT GAT CCC CGG CTG CCC CAG GTG GCC
lys ala gly leu arg leu gln gly ile asp val gly asp pro arg leu pro gln val ala
841/281                             871/291
GCG ACA CCG GAG CAG ATC GAC GCG TTG GCC GCC GAC ATG CGC GCG GCC TCG GTG CTT CGG
ala thr pro glu gln ile asp ala leu ala ala asp met arg ala ala ser val leu arg

```

901/301

TGA

OPA

SEQ ID N° 37D

FIGURE 37D

FEUILLE DE REMPLACEMENT (REGLE 26)

118/185

ORF d'après Cole et al., 1998 (Nature 393 537-544) contenant Rv2753c

1/1 31/11
TAA GGT GAG CGC CGT GGC CGA GAC CGC GCC GCT GCG CGT GCA ACT GAT CGC CAA GAC CGA
OCH gly glu arg arg gly arg asp arg ala ala ala arg ala thr asp arg gln asp arg
61/21 91/31
CTT CTT GGC CCC ACC CGA CGT GCC CTG GAC CAC CGA CGC CGA CGG CGG ACC CGC GCT GGT
leu leu gly pro thr arg arg ala leu asp his arg arg arg arg arg thr arg ala gly
121/41 151/51
CGA GTT CGC CGG CCG GGC CTG CTA TCA GAG CTG GTC CAA GCC CAA TCC CAA GAC CGC CAC
arg val arg arg pro gly leu leu ser glu leu val gln ala gln ser gln asp arg his
181/61 211/71
CAA CGC CGG CTA CCT CCG GCA CAT CAT CGA CGT CGG ACA TTT CTC GGT GCT AGA GCA TGC
gln arg arg leu pro pro ala his his arg arg arg thr phe leu gly ala arg ala cys
241/81 271/91
CAG CGT GTC GTT CTA CAT CAC CGG GAT CTC GCG ATC GTG CAC CCA CGA GCT GAT CCG CCA
gln arg val val leu his his arg asp leu ala ile val his pro arg ala asp pro pro
301/101 331/111
CCG GCA TTT CTC CTA CTC GCA GCT CTC CCA GCG CTA CGT ACC CGA GAA GGA CTC GCG GGT
pro ala phe leu leu leu ala ala leu pro ala leu arg thr arg glu gly leu ala gly
361/121 391/131
CGT CGT GCC GCC CGG CAT GGA GGA CGA CGC CGA CCT GCG CCA CAT CCT GAC CGA GGC CGC
arg arg ala ala arg his gly gly arg arg arg pro ala pro his pro asp arg gly arg
421/141 451/151
CGA CGC CGC CCG CGC CAC CTA CAG CGA GCT GCT GGC CAA GCT GGA AGC CAA GTT CGC CGA
arg arg arg pro arg his leu gln arg ala ala gly gln ala gly ser gln val arg arg
481/161 511/171
CCA ACC CAA CGC GAT CCT GCG CCG CAA GCA GGC CCG CCA AGC CGC CCG CGC GGT GCT GCC
pro thr gln arg asp pro ala pro gln ala gly pro pro ser arg pro arg gly ala ala
541/181 571/191
CAA CGC CAC CGA AAC CCG CAT CGT GGT GAC CGG CAA CTA CCG GGC CTG GCG GCA CTT CAT
gln arg his arg asn pro his arg gly asp arg gln leu pro gly leu ala ala leu his
601/201 631/211
CGC AAT GCG GGC CAG CGA GCA CGC CGA CGT GGA AAT CCG GCG ACT GGC CAT CGA ATG CCT
arg asn ala gly gln arg ala arg arg arg gly asn pro ala thr gly his arg met pro
661/221 691/231
GCG CCA GCT CGC CGC CGT GGC CCC CGC GGT GTT CGC CGA CTT CGA GGT GAC CAC CCT GGC
ala pro ala arg arg arg gly pro arg gly val arg arg leu arg gly asp his pro gly
721/241 751/251
CGA CGG CAC CGA GGT GGC GAC CAG CCC GTT GGC GAC CGA AGC CTG AGG CGG CGT GTC GCT
arg arg his arg gly gly asp gln pro val gly asp arg ser leu arg arg arg val ala
781/261 811/271
GGA CAA ACA CGC GCG CTC GCG GCC GGG ATA AAG CGC CAG GTA ACC TTG GGA GCC GTG ACC
gly gln thr arg ala leu ala ala gly ile lys arg gln val thr leu gly ala val thr
841/281 871/291
ACC GTC GGA TTC GAC GTC GCA GCG CGC CTA GGA ACC CTG CTG ACC GCG ATG GTG ACA CCG
thr val gly phe asp val ala ala arg leu gly thr leu leu thr ala met val thr pro
901/301 931/311
TTT AGC GGC GAT GGC TCC CTG GAC ACC GCC ACC GCG GCG CGG CTG GCC AAC CAC CTG GTC
phe ser gly asp gly ser leu asp thr ala thr ala ala arg leu ala asn his leu val
961/321 991/331
GAT CAG GGG TGC GAC GGT CTG GTG GTC TCG GGC ACC ACC GGC GAG TCG CCG ACC ACC ACC
asp gln gly cys asp gly leu val val ser gly thr thr gly glu ser pro thr thr thr

SEQ ID N° 37F

FIGURE 37F
FEUILLE DE REMPLACEMENT (REGLE 26)

119/185

1021/341	1051/351
GAC GGG GAG AAA ATC GAG CTG CTG CGG GCC GTC TTG GAA GCG GTG GGG GAC CGG GCC CGT	asp gly glu lys ile glu leu leu arg ala val leu glu ala val gly asp arg ala arg
1081/361	1111/371
GTT ATC GCC GGT GCC GGC ACC TAT GAC ACC GCG CAC AGC ATC CGG CTG GCC AAG GCT TGT	val ile ala gly ala gly thr tyr asp thr ala his ser ile arg leu ala lys ala cys
1141/381	1171/391
GCG GCC GAG GGT GCG CAC GGG CTG CTG GTG GTC ACG CCC TAC TAT TCC AAG CCG CCG CAG	ala ala glu gly ala his gly leu leu val val thr pro tyr tyr ser lys pro pro gln
1201/401	1231/411
CGG GGG CTG CAA GCC CAT TTC ACC GCC GTC GCC GAC GCG ACC GAG CTG CCG ATG CTG CTC	arg gly leu gln ala his phe thr ala val ala asp ala thr glu leu pro met leu leu
1261/421	1291/431
TAT GAC ATC CCG GGG CGG TCG GCG GTG CCG ATC GAG CCC GAC ACG ATC CGC GCG TTG GCG	tyr asp ile pro gly arg ser ala val pro ile glu pro asp thr ile arg ala leu ala
1321/441	1351/451
TCG CAT CCG AAC ATC GTC GGA GTC AAG GAC GCC AAA GCC GAC CTG CAC AGC GGC GCC CAA	ser his pro asn ile val gly val lys asp ala lys ala asp leu his ser gly ala gln
1381/461	1411/471
ATC ATG GCC GAC ACC GGA CTG GCC TAC TAT TCC GGC GAC GAC GCG CTC AAC CTG CCC TGG	ile met ala asp thr gly leu ala tyr tyr ser gly asp asp ala leu asn leu pro trp
1441/481	1471/491
CTG GCC ATG GGC GCC ACG GGC TTC ATC AGC GTG ATT GCC CAC CTG GCA GCC GGG CAG CTT	leu ala met gly ala thr gly phe ile ser val ile ala his leu ala ala gly gln leu
1501/501	1531/511
CGA GAG TTG TTG TCC GCC TTC GGT TCT GGG GAT ATC GCC ACC GCC CGC AAG ATC AAC ATT	arg glu leu leu ser ala phe gly ser gly asp ile ala thr ala arg lys ile asn ile
1561/521	1591/531
GCG GTC GCC CCG CTG TGC AAC GCG ATG AGC CGC CTG GGT GGG GTG ACG TTG TCC AAG GCG	ala val ala pro leu cys asn ala met ser arg leu gly gly val thr leu ser lys ala
1621/541	1651/551
GGC TTG CGG CTG CAG GGC ATC GAC GTC GGT GAT CCC CGG CTG CCC CAG GTG GCC GCG ACA	gly leu arg leu gln gly ile asp val gly asp pro arg leu pro gln val ala ala thr
1681/561	1711/571
CCG GAG CAG ATC GAC GCG TTG GCC GCC GAC ATG CGC GCG GCC TCG GTG CTT CGG TGA	pro glu gln ile asp ala leu ala ala asp met arg ala ala ser val leu arg OPA

SEQ ID N° 37F (suite 1)

FIGURE 37F (suite 1)

120/185

1/1 31/11
 GCG GTG AAC TGG TGG GCC CGG ATG GTT CAA GTA CGC CGT CGC AAA CTC GAG CAC AAC AGG
 ala val asn trp trp ala arg met val gln val arg arg arg lys leu glu his asn arg
 61/21 91/31
 AGA CGA CGG ATG GAA GGA GAT GCT GGC GCC GGC CAG CTG AAC CCT GCC GAT GCG AAT AAG
 arg arg arg met glu gly asp ala gly ala gly gln leu asn pro ala asp ala asn lys
 121/41 151/51
 TCG TCG TCT ACG GAG GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCC GGA GCC GAC CAG
 ser ser ser thr glu val lys ala ala asp ser ala glu ser asp ala gly ala asp gln
 181/61 211/71
 ACT GGC CCG CAG GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCC GGA GAG CTC GGC GAG
 thr gly pro gln val lys ala ala asp ser ala glu ser asp ala gly glu leu gly glu
 241/81 271/91
 GAC GCG TGC CCA GAA CAG GCC CTC GTC GAG CGG CGC CCG TCG CGG TTG CGG CGA GGC TGG
 asp ala cys pro glu gln ala leu val glu arg arg pro ser arg leu arg arg gly trp
 301/101 331/111
 CTT GTT GGC ATT GCG GCG ACG CTG CTC GCG TTG GCC GGT GGC CTT GGC GCA GCG GGT TAT
 leu val gly ile ala ala thr leu leu ala leu ala gly gly leu gly ala ala gly tyr
 361/121 391/131
 TTT GCG TTG CGC TCA CAC CAG GAA AGC CAA TCA ATC GCG CGC GAG GAC CTT GCG GCC ATT
 phe ala leu arg ser his gln glu ser gln ser ile ala arg glu asp leu ala ala ile
 421/141 451/151
 GAG GCC GCT AAG GAT TGC GTT GCG GCC ACG CAG GCA CCC GAT GCT GGG GCG ATG TCG GCT
 glu ala ala lys asp cys val ala ala thr gln ala pro asp ala gly ala met ser ala
 481/161
 AGC ATG CAG AAG ATC
 ser met gln lys ile

SEQ ID N° 38A

FIGURE 38A

1/1 31/11
 CAG CGG TGA ACT GGT GGG CCC GGA TGG TTC AAG TAC GCC GTC GCA AAC TCG AGC ACA ACA
 gln arg OPA thr gly gly pro gly trp phe lys tyr ala val ala asn ser ser thr thr
 61/21 91/31
 GGA GAC GAC GGA TGG AAG GAG ATG CTG GCG CCG GCC AGC TGA ACC CTG CCG ATG CGA ATA
 gly asp asp gly trp lys glu met leu ala pro ala ser OPA thr leu pro met arg ile
 121/41 151/51
 AGT CGT CGT CTA CGG AGG TGA AGG CCG CCG ATT CGG CCG AAT CTG ACG CCG GAG CCG ACC
 ser arg arg leu arg arg OPA arg arg arg ile arg arg asn leu thr pro glu pro thr
 181/61 211/71
 AGA CTG GCC CGC AGG TGA AGG CCG CCG ATT CGG CCG AAT CTG ACG CCG GAG AGC TCG GCG
 arg leu ala arg arg OPA arg arg arg ile arg arg asn leu thr pro glu ser ser ala
 241/81 271/91
 AGG ACG CGT GCC CAG AAC AGG CCC TCG TCG AGC GGC GCC CGT CGC GGT TGC GGC GAG GCT
 arg thr arg ala gln asn arg pro ser ser ser gly ala arg arg gly cys gly glu ala
 301/101 331/111
 GGC TTG TTG GCA TTG CCG CGA GCG TGC TCG CGT TGG CCG GTG GCC TTG GCG CAG CCG GTT
 gly leu leu ala leu arg arg arg cys ser arg trp pro val ala leu ala gln arg val
 361/121 391/131
 ATT TTG CGT TGC GCT CAC ACC AGG AAA GCC AAT CAA TCG CGC GCG AGG ACC TTG CCG CCA
 ile leu arg cys ala his thr arg lys ala asn gln ser arg ala arg thr leu arg pro
 421/141 451/151
 TTG AGG CCG CTA AGG ATT GCG TTG CCG CCA CGC AGG CAC CCG ATG CTG GGG CGA TGT CCG
 leu arg pro leu arg ile ala leu arg pro arg arg his pro met leu gly arg cys arg
 481/161
 CTA GCA TGC AGA AGA TC
 leu ala cys arg arg

SEQ ID N° 38B

FEUILLE DE REMPLACEMENT (REGLE 26)

121/185

```

1/1                               31/11
AGC GGT GAA CTG GTG GGC CCG GAT GGT TCA AGT ACG CCG TCG CAA ACT CGA GCA CAA CAG
ser gly glu leu val gly pro asp gly ser ser thr pro ser gln thr arg ala gln gln
61/21                               91/31
GAG ACG ACG GAT GGA AGG AGA TGC TGG CGC CGG CCA GCT GAA CCC TGC CGA TGC GAA TAA
glu thr thr asp gly arg arg cys trp arg arg pro ala glu pro cys arg cys glu OCH
121/41                               151/51
GTC GTC GTC TAC GGA GGT GAA GGC GGC GGA TTC GGC GGA ATC TGA CGC CGG AGC CGA CCA
val val val tyr gly gly glu gly gly gly phe gly gly ile OPA arg arg ser arg pro
181/61                               211/71
GAC TGG CCC GCA GGT GAA GGC GGC GGA TTC GGC GGA ATC TGA CGC CGG AGA GCT CGG CGA
asp trp pro ala gly glu gly gly gly phe gly gly ile OPA arg arg arg ala arg arg
241/81                               271/91
GGA CGC GTG CCC AGA ACA GGC CCT CGT CGA GCG GCG CCC GTC GCG GTT GCG GCG AGG CTG
gly arg val pro arg thr gly pro arg arg ala ala pro val ala val ala ala arg leu
301/101                               331/111
GCT TGT TGG CAT TGC GGC GAC GCT GCT CGC GTT GGC CGG TGG CCT TGG CGC AGC GGG TTA
ala cys trp his cys gly asp ala ala arg val gly arg trp pro trp arg ser gly leu
361/121                               391/131
TTT TGC GTT GCG CTC ACA CCA GGA AAG CCA ATC AAT CGC GCG CGA GGA CCT TGC GGC CAT
phe cys val ala leu thr pro gly lys pro ile asn arg ala arg gly pro cys gly his
421/141                               451/151
TGA GGC CGC TAA GGA TTG CGT TGC GGC CAC GCA GGC ACC CGA TGC TGG GGC GAT GTC GGC
OPA gly arg OCH gly leu arg cys gly his ala gly thr arg cys trp gly asp val gly
481/161
TAG CAT GCA GAA GAT C
AMB his ala glu asp

```

SEQ ID N° 38C

FIGURE 38C

122/185

Séquence Rv0175 prédite par Cole et al., 1998 (Nature 393 537-544) et contenant seq38A

```

1/1                                31/11
GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCC GGA GCC GAC CAG ACT GGC CCG CAG GTG
val lys ala ala asp ser ala glu ser asp ala gly ala asp gln thr gly pro gln val
61/21                                91/31
AAG GCG GCG GAT TCG GCG GAA TCT GAC GCC GGA GAG CTC GGC GAG GAC GCG TGC CCA GAA
lys ala ala asp ser ala glu ser asp ala gly glu leu gly glu asp ala cys pro glu
121/41                               151/51
CAG GCC CTC GTC GAG CGG CGC CCG TCG CGG TTG CGG CGA GGC TGG CTT GTT GGC ATT GCG
gln ala leu val glu arg arg pro ser arg leu arg arg gly trp leu val gly ile ala
181/61                               211/71
GCG ACG CTG CTC GCG TTG GCC GGT GGC CTT GGC GCA GCG GGT TAT TTT GCG TTG CGC TCA
ala thr leu leu ala leu ala gly gly leu gly ala ala gly tyr phe ala leu arg ser
241/81                               271/91
CAC CAG GAA AGC CAA TCA ATC GCG CGC GAG GAC CTT GCG GCC ATT GAG GCC GCT AAG GAT
his gln glu ser gln ser ile ala arg glu asp leu ala ala ile glu ala ala lys asp
301/101                             331/111
TGC GTT GCG GCC ACG CAG GCA CCC GAT GCT GGG GCG ATG TCG GCT AGC ATG CAG AAG ATC
cys val ala ala thr gln ala pro asp ala gly ala met ser ala ser met gln lys ile
361/121                             391/131
ATC GAG TGT GGC ACC GGT GAT TTC GGT GCC CAG GCG TCG TTG TAC ACC AGC ATG CTC GTC
ile glu cys gly thr gly asp phe gly ala gln ala ser leu tyr thr ser met leu val
421/141                             451/151
GAG GCG TAT CAA GCG GCC AGC GTC CAC GTG CAA GTG ACC GAT ATG CGC GCG GCG GTC GAG
glu ala tyr gln ala ala ser val his val gln val thr asp met arg ala ala val glu
481/161                             511/171
CGC AAC AAC AAT GAC GGG TCG GTC GAT GTT CTG GTG GCG CTC CGG GTC AAG GTG TCC AAC
arg asn asn asn asp gly ser val asp val leu val ala leu arg val lys val ser asn
541/181                             571/191
ACC GAC TCG GAT GCC CAT GAA GTC GGC TAC CGT CTT CGG GTC CGG ATG GCA CTG GAT GAG
thr asp ser asp ala his glu val gly tyr arg leu arg val arg met ala leu asp glu
601/201                             631/211
GGC CGC TAT AAG ATC GCC AAA CTC GAC CAG GTG ACG AAG TGA
gly arg tyr lys ile ala lys leu asp gln val thr lys OPA

```

SEQ ID N° 38D

FIGURE 38D

123/185

ORF d'après Cole et al., 1998 (Nature 393 537-544) Contenant Rv0175

```

1/1                                31/11
TGA ACT GGT GGG GCC GGA TGG TGT CAA GTA CGC CGT CGC AAA CTC GAG CAC AAC AGG AGA
OPA thr gly gly ala gly trp cys gln val arg arg arg lys leu glu his asn arg arg
61/21                                91/31
CGA CGG ATG GAA GGA GAT GCT GGC GCC GGC CAG CTG AAC CCT GCC GAT GCG AAT AAG TCG
arg arg met glu gly asp ala gly ala gly gln leu asn pro ala asp ala asn lys ser
121/41                                151/51
TCG TCT ACG GAG GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCC GGA GCC GAC CAG ACT
ser ser thr glu val lys ala ala asp ser ala glu ser asp ala gly ala asp gln thr
181/61                                211/71
GGC CCG CAG GTG AAG GCG GCG GAT TCG GCG GAA TCT GAC GCC GGA GAG CTC GGC GAG GAC
gly pro gln val lys ala ala asp ser ala glu ser asp ala gly glu leu gly glu asp
241/81                                271/91
GCG TGC CCA GAA CAG GCC CTC GTC GAG CGG CGC CCG TCG CGG TTG CGG CGA GGC TGG CTT
ala cys pro glu gln ala leu val glu arg arg pro ser arg leu arg arg gly trp leu
301/101                               331/111
GTT GGC ATT GCG GCG ACG CTG CTC GCG TTG GCC GGT GGC CTT GGC GCA GCG GGT TAT TTT
val gly ile ala ala thr leu leu ala leu ala gly gly leu gly ala ala gly tyr phe
361/121                               391/131
GCG TTG CGC TCA CAC CAG GAA AGC CAA TCA ATC GCG CGC GAG GAC CTT GCG GCC ATT GAG
ala leu arg ser his gln glu ser gln ser ile ala arg glu asp leu ala ala ile glu
421/141                               451/151
GCC GCT AAG GAT TGC GTT GCG GCC ACG CAG GCA CCC GAT GCT GGG GCG ATG TCG GCT AGC
ala ala lys asp cys val ala ala thr gln ala pro asp ala gly ala met ser ala ser
481/161                               511/171
ATG CAG AAG ATC ATC GAG TGT GGC ACC GGT GAT TTC GGT GCC CAG GCG TCG TTG TAC ACC
met gln lys ile ile glu cys gly thr gly asp phe gly ala gln ala ser leu tyr thr
541/181                               571/191
AGC ATG CTC GTC GAG GCG TAT CAA GCG GCC AGC GTC CAC GTG CAA GTG ACC GAT ATG CGC
ser met leu val glu ala tyr gln ala ala ser val his val gln val thr asp met arg
601/201                               631/211
GCG GCG GTC GAG CGC AAC AAC AAT GAC GGG TCG GTC GAT GTT CTG GTG GCG CTC CGG GTC
ala ala val glu arg asn asn asn asp gly ser val asp val leu val ala leu arg val
661/221                               691/231
AAG GTG TCC AAC ACC GAC TCG GAT GCC CAT GAA GTC GGC TAC CGT CTT CGG GTC CGG ATG
lys val ser asn thr asp ser asp ala his glu val gly tyr arg leu arg val arg met
721/241                               751/251
GCA CTG GAT GAG GGC CGC TAT AAG ATC GCC AAA CTC GAC CAG GTG ACG AAG TGA
ala leu asp glu gly arg tyr lys ile ala lys leu asp gln val thr lys OPA

```

SEQ ID N° 38F

FIGURE 38F

124/185

1/1 31/11
 ACA CCT CCC CCC CCG CCG CCG CTG CCG CCG GTT CCC TTT CCC AAG GAA TGT CCG GCG CCG
 thr pro pro pro pro pro pro leu pro pro val pro phe pro lys glu cys pro ala pro
 61/21 91/31
 GGC GTG ATG CAA GGC TGC CTT GAG AGC ACC AGC GGC TTG ATC ATG GGC ATC GAC AGC AAG
 gly val met gln gly cys leu glu ser thr ser gly leu ile met gly ile asp ser lys
 121/41 151/51
 ACC GCA CTG GTC GCC GAG CGC ATC ACC GGT GCC GTC GAG GAG ATC
 thr ala leu val ala glu arg ile thr gly ala val glu glu ile

SEQ ID N° 39A

FIGURE 39A

1/1 31/11
 CAC CTC CCC CCC CGC CGC CGC TGC CGC CGG TTC CCT TTC CCA AGG AAT GTC CGG CGC CGG
 his leu pro pro arg arg arg cys arg arg phe pro phe pro arg asn val arg arg arg
 61/21 91/31
 GCG TGA TGC AAG GCT GCC TTG AGA GCA CCA GCG GCT TGA TCA TGG GCA TCG ACA GCA AGA
 ala OPA cys lys ala ala leu arg ala pro ala ala OPA ser trp ala ser thr ala arg
 121/41 151/51
 CCG CAC TGG TCG CCG AGC GCA TCA CCG GTG CCG TCG AGG AGA TC
 pro his trp ser pro ser ala ser pro val pro ser arg arg

SEQ ID N° 39B

FIGURE 39B

1/1 31/11
 GAC ACC TCC CCC CCC GCC GCC GCT GCC GCC GGT TCC CTT TCC CAA GGA ATG TCC GGC GCC
 asp thr ser pro pro ala ala ala ala ala gly ser leu ser gln gly met ser gly ala
 61/21 91/31
 GGG CGT GAT GCA AGG CTG CCT TGA GAG CAC CAG CGG CTT GAT CAT GGG CAT CGA CAG CAA
 gly arg asp ala arg leu pro OPA glu his gln arg leu asp his gly his arg gln gln
 121/41 151/51
 GAC CGC ACT GGT CGC CGA GCG CAT CAC CGG TGC CGT CGA GGA GAT C
 asp arg thr gly arg arg ala his his arg cys arg arg gly asp

SEQ ID N° 39C

FIGURE 39C

125/185

Séquence codante Rv3006 prédite par Cole et al., 1998 (Nature 393 537-544) et contenant seq39A

```

1/1                                     31/11
ATG TGG ACA ACG CGG TTG GTT CGA TCC GGA CTC GCC GCG CTG TGC GCG GCA GTG CTG GTA
Met trp thr thr arg leu val arg ser gly leu ala ala leu cys ala ala val leu val
61/21
TCG AGC GGC TGC GCA CGG TTC AAC GAC GCT CAA TCT CAG CCG TTC ACC ACC GAA CCG GAG
ser ser gly cys ala arg phe asn asp ala gln ser gln pro phe thr thr glu pro glu
121/41
CTG CGG CCC CAA CCC AGC TCG ACA CCT CCC CCC CCG CCG CTG CCG CCG GTT CCC TTT
leu arg pro gln pro ser ser thr pro pro pro pro pro leu pro pro val pro phe
181/61
CCC AAG GAA TGT CCG GCG CCG GGC GTG ATG CAA GGC TGC CTT GAG AGC ACC AGC GGC TTG
pro lys glu cys pro ala pro gly val met gln gly cys leu glu ser thr ser gly leu
241/81
ATC ATG GGC ATC GAC AGC AAG ACC GCA CTG GTC GCC GAG CGC ATC ACC GGT GCC GTC GAG
ile met gly ile asp ser lys thr ala leu val ala glu arg ile thr gly ala val glu
301/101
GAG ATC TCT ATC AGC GCC GAG CCG AAG GTA AAG ACG GTC ATC CCC GTG GAT CCT GCC GGT
glu ile ser ile ser ala glu pro lys val lys thr val ile pro val asp pro ala gly
361/121
GAC GGT GGC TTG ATG GAC ATT GTG CTG TCG CCC ACC TAC TCG CAA GAC CCG CTG ATG TAC
asp gly gly leu met asp ile val leu ser pro thr tyr ser gln asp arg leu met tyr
421/141
GCC TAC ATC AGC ACG CCC ACC GAC AAC CGG GTG GTG CGA GTG GCC GAC GGC GAC ATC CCC
ala tyr ile ser thr pro thr asp asn arg val val arg val ala asp gly asp ile pro
481/161
AAG GAC ATC CTG ACC GGC ATC CCC AAA GGT GCT GCC GGT AAC ACC GGG GCG CTG ATC TTC
lys asp ile leu thr gly ile pro lys gly ala ala gly asn thr gly ala leu ile phe
541/181
ACC AGT CCC ACC ACG CTG GTC GTG ATG ACC GGG GAT GCT GGC GAC CCG GCG TTG GCC GCC
thr ser pro thr thr leu val val met thr gly asp ala gly asp pro ala leu ala ala
601/201
GAT CCC CAA TCG TTG GCC GGT AAG GTC CTG CGT ATC GAA CAG CCC ACC ACC ATC GGC CAG
asp pro gln ser leu ala gly lys val leu arg ile glu gln pro thr thr ile gly gln
661/221
ACG CCG CCG ACG ACG GCG CTG TCT GGC ATC GGC TCC GGC GGC GGC TTG TGC ATC GAT CCG
thr pro pro thr thr ala leu ser gly ile gly ser gly gly gly leu cys ile asp pro
721/241
GTC GAC GGC TCG CTA TAT GTC GCC GAC CGC ACG CCA ACG GCG GAC CGA TTG CAG CGC ATC
val asp gly ser leu tyr val ala asp arg thr pro thr ala asp arg leu gln arg ile
781/261
ACC AAG AAC TCG GAG GTC TCT ACG GTA TGG ACC TGG CCG GAC AAG CCC GGC GTG GCC GGG
thr lys asn ser glu val ser thr val trp thr trp pro asp lys pro gly val ala gly
841/281
TGT GCC GCG ATG GAC GGC ACC GTG CTG GTC AAC CTG ATT AAT ACC AAA CTG ACG GTG GCG
cys ala ala met asp gly thr val leu val asn leu ile asn thr lys leu thr val ala
901/301
GTC CCG CTC GCG CCG TCG ACC GGT GCG GTC ACC GGA GAA CCC GAC GTT GTC CGC AAA GAC
val arg leu ala pro ser thr gly ala val thr gly glu pro asp val val arg lys asp
961/321
ACT CAT GCG CAT GCG TGG GCA TTA CGG ATG TCG CCG GAC GGC AAC GTC TGG GGA GCC ACC
thr his ala his ala trp ala leu arg met ser pro asp gly asn val trp gly ala thr
1021/341
GTC AAC AAG ACC GCC GGC GAC GCG GAG AAG CTC GAC GAT GTG GTG TTC CCG CTG TTC CCG
val asn lys thr ala gly asp ala glu lys leu asp asp val val phe pro leu phe pro
1081/361
CAG GGT GGC GGC TTC CCG CGC AAC AAC GAC GAC AAG ACC TGA
gln gly gly gly phe pro arg asn asn asp asp lys thr OPA

```

SEQ ID N° 39D

FIGURE 39D

FEUILLE DE REMPLACEMENT (REGLE 26)

126/185

ORF d'après Cole et al., 1998 (Nature 393 537-544) et contenant Rv3006

```

1/1                               31/11
TAA GGC CAT TTA GTG CCG AAT TGG GGA TTT GAG CGG CGC TTT CGC CAG ACA ATC CGC ACA
OCH gly his leu val pro asn trp gly phe glu arg arg phe arg gln thr ile arg thr
61/21                               91/31
TTG ACC CTG ACC AGC CCA CCA AAA GGC CCC AAT TGG GCC GCC ATG CCG ACA GTG CGC ACC
leu thr leu thr ser pro pro lys gly pro asn trp ala ala met pro thr val arg thr
121/41                               151/51
CCG GCA GGT GGC GGC GAT GCC CAC AAT GTC CGT AGC CTG TCG GTC ATG TGG ACA ACG CGG
pro ala gly gly gly asp ala his asn val arg ser leu ser val met trp thr thr arg
181/61                               211/71
TTG GTT CGA TCC GGA CTC GCC GCG CTG TGC GCG GCA GTG CTG GTA TCG AGC GGC TGC GCA
leu val arg ser gly leu ala ala leu cys ala ala val leu val ser ser gly cys ala
241/81                               271/91
CGG TTC AAC GAC GCT CAA TCT CAG CCG TTC ACC ACC GAA CCG GAG CTG CCG CCC CAA CCC
arg phe asn asp ala gln ser gln pro phe thr thr glu pro glu leu arg pro gln pro
301/101                               331/111
AGC TCG ACA CCT CCC CCC CCG CCG CCG CTG CCG CCG GTT CCC TTT CCC AAG GAA TGT CCG
ser ser thr pro pro pro pro pro pro leu pro pro val pro phe pro lys glu cys pro
361/121                               391/131
GCG CCG GGC GTG ATG CAA GGC TGC CTT GAG AGC ACC AGC GGC TTG ATC ATG GGC ATC GAC
ala pro gly val met gln gly cys leu glu ser thr ser gly leu ile met gly ile asp
421/141                               451/151
AGC AAG ACC GCA CTG GTC GCC GAG CGC ATC ACC GGT GCC GTC GAG GAG ATC TCT ATC AGC
ser lys thr ala leu val ala glu arg ile thr gly ala val glu glu ile ser ile ser
481/161                               511/171
GCC GAG CCG AAG GTA AAG ACG GTC ATC CCC GTG GAT CCT GCC GGT GAC GGT GGC TTG ATG
ala glu pro lys val lys thr val ile pro val asp pro ala gly asp gly gly leu met
541/181                               571/191
GAC ATT GTG CTG TCG CCC ACC TAC TCG CAA GAC CGG CTG ATG TAC GCC TAC ATC AGC ACG
asp ile val leu ser pro thr tyr ser gln asp arg leu met tyr ala tyr ile ser thr
601/201                               631/211
CCC ACC GAC AAC CGG GTG GTG CGA GTG GCC GAC GGC GAC ATC CCC AAG GAC ATC CTG ACC
pro thr asp asn arg val val arg val ala asp gly asp ile pro lys asp ile leu thr
661/221                               691/231
GGC ATC CCC AAA GGT GCT GCC GGT AAC ACC GGG GCG CTG ATC TTC ACC AGT CCC ACC ACG
gly ile pro lys gly ala ala gly asn thr gly ala leu ile phe thr ser pro thr thr
721/241                               751/251
CTG GTC GTG ATG ACC GGG GAT GCT GGC GAC CCG CCG TTG GCC GCC GAT CCC CAA TCG TTG
leu val val met thr gly asp ala gly asp pro ala leu ala ala asp pro gln ser leu
781/261                               811/271
GCC GGT AAG GTC CTG CGT ATC GAA CAG CCC ACC ACC ATC GGC CAG ACG CCG CCG ACG ACG
ala gly lys val leu arg ile glu gln pro thr thr ile gly gln thr pro pro thr thr
841/281                               871/291
GCG CTG TCT GGC ATC GGC TCC GGC GGC GGC TTG TGC ATC GAT CCG GTC GAC GGC TCG CTA
ala leu ser gly ile gly ser gly gly gly leu cys ile asp pro val asp gly ser leu
901/301                               931/311
TAT GTC GCC GAC CGC ACG CCA ACG GCG GAC CGA TTG CAG CGC ATC ACC AAG AAC TCG GAG
tyr val ala asp arg thr pro thr ala asp arg leu gln arg ile thr lys asn ser glu

```

SEQ ID N° 39F

FIGURE 39F

FEUILLE DE REMPLACEMENT (REGLE 26)

127/185

961/321 991/331
 GTC TCT ACG GTA TGG ACC TGG CCG GAC AAG CCC GGC GTG GCC GGG TGT GCC GCG ATG GAC
 val ser thr val trp thr trp pro asp lys pro gly val ala gly cys ala ala met asp
 1021/341 1051/351
 GGC ACC GTG CTG GTC AAC CTG ATT AAT ACC AAA CTG ACG GTG GCG GTC CCG CTC GCG CCG
 gly thr val leu val asn leu ile asn thr lys leu thr val ala val arg leu ala pro
 1081/361 1111/371
 TCG ACC GGT GCG GTC ACC GGA GAA CCC GAC GTT GTC CCG AAA GAC ACT CAT GCG CAT GCG
 ser thr gly ala val thr gly glu pro asp val val arg lys asp thr his ala his ala
 1141/381 1171/391
 TGG GCA TTA CCG ATG TCG CCG GAC GGC AAC GTC TGG GGA GCC ACC GTC AAC AAG ACC GCC
 trp ala leu arg met ser pro asp gly asn val trp gly ala thr val asn lys thr ala
 1201/401 1231/411
 GGC GAC GCC GAG AAG CTC GAC GAT GTG GTG TTC CCG CTG TTC CCG CAG GGT GGC GGC TTC
 gly asp ala glu lys leu asp asp val val phe pro leu phe pro gln gly gly gly phe
 1261/421
 CCG CGC AAC AAC GAC GAC AAG ACC TGA
 pro arg asn asn asp asp lys thr OPA

SEQ ID N° 39F (suite)

FIGURE 39F (suite)

1/1 31/11
 GAA GGC CTT GTT GAG CCG GCG CAC GAA AAC GAT CGT TGT GTG TAC ATT GGT GTG TAT GCC
 glu gly leu val glu pro ala his glu asn asp arg cys val tyr ile gly val tyr gly
 61/21 91/31
 TCG GTT GAA CGT GTA TGT GCC CGA CGA ATT GGC GGA GCG CCG CAG GGC GCG GGG CTT GAA
 ser val glu arg val cys ala arg arg ile gly gly ala arg gln gly ala gly leu glu
 121/41 151/51
 CGT CTC GGC GCT GAC TCA GGC CCG GAT CAG TGC CGA GTT GGA GAA CTC CCG AAC CGA TGC
 arg leu gly ala asp ser gly arg asp gln cys arg val gly glu leu arg asn arg cys
 181/61 211/71
 GTG GCT TGA GGG GTT GGA ACC CAG AAG CAC CGG CCG TCG GCA TGA TGA CGT GCT GGG TGC
 val ala OPA gly val gly thr gln lys his arg arg ser ala OPA OPA arg ala gly cys
 241/81 271/91
 GAT CGA TGC CCG TCG CGA TGA GTT CGA AGC GTG AGA GCA TCG CCC ACT TCG CCG CCG GAG
 asp arg cys arg ser arg OPA val arg ser val arg ala ser pro thr ser pro pro glu
 301/101 331/111
 CAG GTG GTC GTC GAC GCG AGT GCC ATG GTG GAT C
 gln val val val asp ala ser ala met val asp

SEQ ID N° 40A

FIGURE 40A

128/185

```

1/1                               31/11
AAG GCC TTG TTG AGC CGG CGC ACG AAA ACG ATC GTT GTG TGT ACA TTG GTG TGT ATG GCT
lys ala leu leu ser arg arg thr lys thr ile val val cys thr leu val cys met ala
61/21                               91/31
CGG TTG AAC GTG TAT GTG CCC GAC GAA TTG GCG GAG CGC GCC AGG GCG CGG GGC TTG AAC
arg leu asn val tyr val pro asp glu leu ala glu arg ala arg ala arg gly leu asn
121/41                               151/51
GTC TCG GCG CTG ACT CAG GCC GCG ATC AGT GCC GAG TTG GAG AAC TCC GCA ACC GAT GCG
val ser ala leu thr gln ala ala ile ser ala glu leu glu asn ser ala thr asp ala
181/61                               211/71
TGG CTT GAG GGG TTG GAA CCC AGA AGC ACC GGC GCT CGG CAT GAT GAC GTG CTG GGT GCG
trp leu glu gly leu glu pro arg ser thr gly ala arg his asp asp val leu gly ala
241/81                               271/91
ATC GAT GCC GCT CGC GAT GAG TTC GAA GCG TGA GAG CAT CGC CCA CTT CGC CGC CGG AGC
ile asp ala ala arg asp glu phe glu ala OPA glu his arg pro leu arg arg arg ser
301/101                               331/111
AGG TGG TCG TCG ACG CGA GTG CCA TGG TGG ATC
arg trp ser ser thr arg val pro trp trp ile

```

SEQ ID N° 40B

FIGURE 40B

```

1/1                               31/11
AGG CCT TGT TGA GCC GGC GCA CGA AAA CGA TCG TTG TGT GTA CAT TGG TGT GTA TGG CTC
arg pro cys OPA ala gly ala arg lys arg ser leu cys val his trp cys val trp leu
61/21                               91/31
GGT TGA ACG TGT ATG TGC CCG ACG AAT TGG CGG AGC GCG CCA GGG CGC GGG GCT TGA ACG
gly OPA thr cys met cys pro thr asn trp arg ser ala pro gly arg gly ala OPA thr
121/41                               151/51
TCT CGG CGC TGA CTC AGG CCG CGA TCA GTG CCG AGT TGG AGA ACT CCG CAA CCG ATG CGT
ser arg arg OPA leu arg pro arg ser val pro ser trp arg thr pro gln pro met arg
181/61                               211/71
GGC TTG AGG GGT TGG AAC CCA GAA GCA CCG GCG CTC GGC ATG ATG ACG TGC TGG GTG CGA
gly leu arg gly trp asn pro glu ala pro ala leu gly met met thr cys trp val arg
241/81                               271/91
TCG ATG CCG CTC GCG ATG AGT TCG AAG CGT GAG AGC ATC GCC CAC TTC GCC GCC GGA GCA
ser met pro leu ala met ser ser lys arg glu ser ile ala his phe ala ala gly ala
301/101
GGT GGT CGT CGA CGC GAG TGC CAT GGT GGA TC
gly gly arg arg arg glu cys his gly gly

```

SEQ ID N° 40C

FIGURE 40C

129/185

Séquence codante Rv0549c prédite par Cole et al., 1998 (Nature 393:537-544) et contenant seq40A

```

1/1                               31/11
gtg aga gca tcg ccc act tcg ccg ccg gag cag gtg gtc gtc gac gcg agt gcc atg gtg
val arg ala ser pro thr ser pro pro glu gln val val val asp ala ser ala met val
61/21                               91/31
gat cta ctg gct cgc act agc gat cgg tgc tct gcg gtg cgc gcg ccg ctg gct cgg acc
asp leu leu ala arg thr ser asp arg cys ser ala val arg ala arg leu ala arg thr
121/41                               151/51
gcg atg cac gcg ccg gcg cac ttc gat gca gag gtg ttg tcg gcg ctg ggg cgc atg cag
ala met his ala pro ala his phe asp ala glu val leu ser ala leu gly arg met gln
181/61                               211/71
cgc gcc ggc gca ctc acc gtt gcc tat gtc gat gcg gca ctg gag gag ttg cga cag gtg
arg ala gly ala leu thr val ala tyr val asp ala ala leu glu glu leu arg gln val
241/81                               271/91
ccg gtg act cga cac ggt ctt tcg tcg ctg ctt gct gga gcg tgg tcg cgc cgc gac acc
pro val thr arg his gly leu ser ser leu leu ala gly ala trp ser arg arg asp thr
301/101                               331/111
ctc cgc ctg acc gat gcc ctc tac gtc gag ctg gcc gaa acg gca ggt ctg gtg ttg ttg
leu arg leu thr asp ala leu tyr val glu leu ala glu thr ala gly leu val leu leu
361/121                               391/131
acc acc gac gaa aga ttg gca cgc gcc tgg ccc tcg gct cac gcc atc ggc tga
thr thr asp glu arg leu ala arg ala trp pro ser ala his ala ile gly OPA

```

SEQ ID N° 40D

FIGURE 40D

ORF d'après Cole et al., 1998 (Nature 393:537-544) et contenant Rv0549c

```

1/1                               31/11
tga gtt cga agc gtg aga gca tcg ccc act tcg ccg ccg gag cag gtg gtc gtc gac gcg
OPA val arg ser val arg ala ser pro thr ser pro pro glu gln val val val asp ala
61/21                               91/31
agt gcc atg gtg gat cta ctg gct cgc act agc gat cgg tgc tct gcg gtg cgc gcg ccg
ser ala met val asp leu leu ala arg thr ser asp arg cys ser ala val arg ala arg
121/41                               151/51
ctg gct cgg acc gcg atg cac gcg ccg gcg cac ttc gat gca gag gtg ttg tcg gcg ctg
leu ala arg thr ala met his ala pro ala his phe asp ala glu val leu ser ala leu
181/61                               211/71
ggg cgc atg cag cgc gcc ggc gca ctc acc gtt gcc tat gtc gat gcg gca ctg gag gag
gly arg met gln arg ala gly ala leu thr val ala tyr val asp ala ala leu glu glu
241/81                               271/91
ttg cga cag gtg ccg gtg act cga cac ggt ctt tcg tcg ctg ctt gct gga gcg tgg tcg
leu arg gln val pro val thr arg his gly leu ser ser leu leu ala gly ala trp ser
301/101                               331/111
cgc cgc gac acc ctc cgc ctg acc gat gcc ctc tac gtc gag ctg gcc gaa acg gca ggt
arg arg asp thr leu arg leu thr asp ala leu tyr val glu leu ala glu thr ala gly
361/121                               391/131
ctg gtg ttg ttg acc acc gac gaa aga ttg gca cgc gcc tgg ccc tcg gct cac gcc atc
leu val leu leu thr thr asp glu arg leu ala arg ala trp pro ser ala his ala ile
421/141
ggc tga
gly OPA

```

SEQ ID N° 40F

FEUILLE DE REMPLACEMENT (REGLE 26)
FIGURE 40F

130/185

```

1/1                                31/11
CCT GGC CGG GAC GCC TAC GTG TAG CCC GCG GCT AGC ACA GGA TAG CCA TTG TTG TGC GGT
pro gly arg asp ala tyr val AMB pro ala ala ser thr gly AMB pro leu leu cys gly
61/21                                91/31
AGC GCC AAA ACG ATC AGC CCT TCG CGG ACA TGT CAG CAC CCG CCT TGG CCG GGA GAG CGG
ser ala lys thr ile ser pro ser arg thr cys gln his pro pro trp pro gly glu arg
121/41                                151/51
CGT CGT GAC CGT GCT GTC ACC ACG TCT GGT TAG GCT CGG GGC GCG GGC TGG CGC GGA GGA
arg arg asp arg ala val thr thr ser gly AMB ala arg gly ala gly trp arg gly gly
181/61                                211/71
GGT GTG TTG CGG AGG AGG TGT GTT GTA GTG GGG ACG GCG GAT CGG CCG TTG GAC GCC TCG
gly val leu arg arg arg cys val val val gly thr ala asp arg pro leu asp ala ser
241/81                                271/91
GCC TTG CGG GAC TGG GCA CAC GCC GTC GTC AGC GAT C
ala leu arg asp trp ala his ala val val ser asp

```

SEQ ID N° 41A

FIGURE 41A

```

1/1                                31/11
CTG GCC GGG ACG CCT ACG TGT AGC CCG CGG CTA GCA CAG GAT AGC CAT TGT TGT GCG GTA
leu ala gly thr pro thr cys ser pro arg leu ala gln asp ser his cys cys ala val
61/21                                91/31
GCG CCA AAA CGA TCA GCC CTT CGC GGA CAT GTC AGC ACC CGC CTT GGC CGG GAG AGC GGC
ala pro lys arg ser ala leu arg gly his val ser thr arg leu gly arg glu ser gly
121/41                                151/51
GTC GTG ACC GTG CTG TCA CCA CGT CTG GTT AGG CTC GGG GCG CGG GCT GGC GCG GAG GAG
val val thr val leu ser pro arg leu val arg leu gly ala arg ala gly ala glu glu
181/61                                211/71
GTG TGT TGC GGA GGA GGT GTG TTG TAG TGG GGA CGG CGG ATC GGC CGT TGG ACG CCT CGG
val cys cys gly gly gly val leu AMB trp gly arg arg ile gly arg trp thr pro arg
241/81                                271/91
CCT TGC GGG ACT GGG CAC ACG CCG TCG TCA GCG ATC
pro cys gly thr gly his thr pro ser ser ala ile

```

SEQ ID N° 41B

FIGURE 41B

131/185

```

1/1                               31/11
TGG CCG GGA CGC CTA CGT GTA GCC CGC GGC TAG CAC AGG ATA GCC ATT GTT GTG CGG TAG
trp pro gly arg leu arg val ala arg gly AMB his arg ile ala ile val val arg AMB
61/21                               91/31
CGC CAA AAC GAT CAG CCC TTC GCG GAC ATG TCA GCA CCC GCC TTG GCC GGG AGA GCG GCG
arg gln asn asp gln pro phe ala asp met ser ala pro ala leu ala gly arg ala ala
121/41                               151/51
TCG TGA CCG TGC TGT CAC CAC GTC TGG TTA GGC TCG GGG CGC GGG CTG GCG CGG AGG AGG
ser OPA pro cys cys his his val trp leu gly ser gly arg gly leu ala arg arg arg
181/61                               211/71
TGT GTT GCG GAG GAG GTG TGT TGT AGT GGG GAC GGC GGA TCG GCC GTT GGA CGC CTC GGC
cys val ala glu glu val cys cys ser gly asp gly gly ser ala val gly arg leu gly
241/81                               271/91
CTT GCG GGA CTG GGC ACA CGC CGT CGT CAG CGA TC
leu ala gly leu gly thr arg arg arg gln arg

```

SEQ ID N° 41C

FIGURE 41C

Séquence codante Rv2975c prédite par Cole et al, 1998 (Nature 393: 537-544) et contenant seq41A

```

1/1                               31/11
gtg ggg acg gcg gat cgg ccg ttg gac gcc tcg gcc ttg cgg gac tgg gca cac gcc gtc
val gly thr ala asp arg pro leu asp ala ser ala leu arg asp trp ala his ala val
61/21                               91/31
gtc agc gat ctg atc ctc cac atc gac gag atc aac cgg ctc aat gtg ttc ccg gtc gct
val ser asp leu ile leu his ile asp glu ile asn arg leu asn val phe pro val ala
121/41                               151/51
gac tcc gat acc ggc gtc aac atg ctg ttc acc atg cgt gcc gcg gtc gta gaa gct gat
asp ser asp thr gly val asn met leu phe thr met arg ala ala val val glu ala asp
181/61                               211/71
ttg cac gcg aat tcg cag gct gac gcc gaa gac gtg gcg cgg gtt gcg gcc gct ctc gcg
leu his ala asn ser gln ala asp ala glu asp val ala arg val ala ala ala leu ala
241/81
gcc ggc gcg cgt tga
ala gly ala arg OPA

```

SEQ ID N° 41D

FIGURE 41D

132/185

ORF d'après Cole et al, 1998 (Nature 393: 537-544) et contenant Rv2975c

```

1/1                               31/11
tag gct cgg ggc gcg ggc tgg cgc gga gga ggt gtg ttg cgg agg agg tgt gtt gta gtg
AMB ala arg gly ala gly trp arg gly gly gly val leu arg arg arg cys val val val
61/21                               91/31
ggg acg gcg gat cgg ccg ttg gac gcc tcg gcc ttg cgg gac tgg gca cac gcc gtc gtc
gly thr ala asp arg pro leu asp ala ser ala leu arg asp trp ala his ala val val
121/41                               151/51
agc gat ctg atc ctc cac atc gac gag atc aac cgg ctc aat gtg ttc ccg gtc gct gac
ser asp leu ile leu his ile asp glu ile asn arg leu asn val phe pro val ala asp
181/61                               211/71
tcc gat acc ggc gtc aac atg ctg ttc acc atg cgt gcc gcg gtc gta gaa gct gat ttg
ser asp thr gly val asn met leu phe thr met arg ala ala val val glu ala asp leu
241/81                               271/91
cac gcg aat tcg cag gct gac gcc gaa gac gtg gcg cgg gtt gcg gcc gct ctc gcg gcc
his ala asn ser gln ala asp ala glu asp val ala arg val ala ala leu ala ala
301/101
ggc gcg cgt tga
gly ala arg OPA

```

SEQ ID N° 41F

FIGURE 41F

séquence Rv 2974C prédite par Cole et al. (Nature 393:537-544) et pouvant être dans la même phase de lecture que Seq41D. Le séquençage de cette région fait apparaître dans un cas sur trois une délétion de deux nucléotides mettant en phase bservé dans

```

1/1                               31/11
ttg aac gga gct cgc ggc aac tcc ggc gtg atc ctg tcc cag atc ctg cgc ggg atc gca
leu asn gly ala arg gly asn ser gly val ile leu ser gln ile leu arg gly ile ala
61/21                               91/31
gag gtg acc gcg act gcg gcc gcc gcc tct ggc gcg gta ttg cgg gcg gtc gac gcc aac
glu val thr ala thr ala ala ala ala ser gly ala val leu arg ala val asp ala asn
121/41                               151/51
gcc ctc ggg gcc gcg ttg tgg cgc ggc gtc gag ttg gtc gtc gcg tcg atg ggt ggc gtg
ala leu gly ala ala leu trp arg gly val glu leu val val ala ser met gly gly val
181/61                               211/71
gag gtg ccg gga act atc gtc tcg gtg ctg cgg gcc gcc gcc gga gcc gtc gac cag tgc
glu val pro gly thr ile val ser val leu arg ala ala ala gly ala val asp gln cys
241/81                               271/91
gcg cac gag ggg ttg gcc ggt gcg gtc acc gcc gcc ggt gac gcg gcg gtc atc gcg ctg
ala his glu gly leu ala gly ala val thr ala ala gly asp ala ala val ile ala leu
301/101                               331/111
gaa aag acc ccc gaa cag ctt gac gtg ctc gcc gat gcg gcc gcg gtg gac gcc gcc gga
glu lys thr pro glu gln leu asp val leu ala asp ala gly ala val asp ala gly gly

```

SEQ ID N° 41S

FIGURE 41S

FEUILLE DE REMPLACEMENT (REGLE 26)

133/185

361/121
 cgg ggc ctg ctg gtt ctg ctg gac gcg ttg cgc tcc acc atc tgc ggg cag gca cct gcc
 arg gly leu leu val leu leu asp ala leu arg ser thr ile cys gly gln ala pro ala
 421/141
 cgg gcg gtc tac gaa ccc tcg ccg cgc gcg ttg ccg acc gac acg gct acc caa cgc ccc
 arg ala val tyr glu pro ser pro arg ala leu pro thr asp thr ala thr gln arg pro
 481/161
 gcc ccg caa ttc gag gtg atg tat ctg ttg gcg gta tgt gat gct gca gcg gcg gac cag
 ala pro gln phe glu val met tyr leu leu ala val cys asp ala ala ala ala asp gln
 541/181
 ttg cgg gat cga ctc aag gaa ttg ggt gag tcg gtg gcc atc gcc gct gct ccg ccc gac
 leu arg asp arg leu lys glu leu gly glu ser val ala ile ala ala ala pro pro asp
 601/201
 agc tac tcc gta cac gtc cac acc gac gac gcc ggt gcc gcc gtg gaa gcc gga ttg gcg
 ser tyr ser val his val his thr asp asp ala gly ala ala val glu ala gly leu ala
 661/221
 gtg ggg cga gtt agc cgg atc gtg atc tcg gcg ctc ggt tcc ggg acc agc gga ttg ccg
 val gly arg val ser arg ile val ile ser ala leu gly ser gly thr ser gly leu pro
 721/241
 gcc ggt ggc tgg acg cgg ggc cgc gcc gtg ctg gcg gtc gtc gac ggc gac ggt gcc gcc
 ala gly gly trp thr arg gly arg ala val leu ala val val asp gly asp gly ala ala
 781/261
 gag ctg ttc gcc ggg gag ggc gcc tgc gtg ctg cga ccg ggt cca gac gcc gtg aca ccg
 glu leu phe ala gly glu gly ala cys val leu arg pro gly pro asp ala val thr pro
 841/281
 gcc gcc gat atc agt gcc cac cag ctg gtg cgg gcc gtg gta gac acc ggc gcc gcg cac
 ala ala asp ile ser ala his gln leu val arg ala val val asp thr gly ala ala his
 901/301
 gtg atg gtg ctg ccc aat ggc tat gtg gcc gcc gaa gaa ctg gtg gcc ggg tgt acc gcg
 val met val leu pro asn gly tyr val ala ala glu glu leu val ala gly cys thr ala
 961/321
 gcg atc ggc tgg ggc gtc gac gtg gta ccc gtg ccg acc gga tcg atg gtg cag ggg ttg
 ala ile gly trp gly val asp val val pro val pro thr gly ser met val gln gly leu
 1021/341
 gcc gcg ctg gcc gtg cat gac gcg gcc cgc cag gcc gtc gac gac ggc tac agc atg gcc
 ala ala leu ala val his asp ala ala arg gln ala val asp asp gly tyr ser met ala
 1081/361
 cgt gcc gcc ggt gct tcc cgg cac gga tcg gtg cgc att gcc acc caa aag gcg ctg acc
 arg ala ala gly ala ser arg his gly ser val arg ile ala thr gln lys ala leu thr
 1141/381
 tgg gcc ggt acc tgc aag ccg ggc gac ggt ctg ggt atc gcg ggc gac gag gtg ctg atc
 trp ala gly thr cys lys pro gly asp gly leu gly ile ala gly asp glu val leu ile
 1201/401
 gtc gcc gac gat gtc gcc gcg gcg gcc atc ggt ctg gtc gac ctg ttg ttg gca tcg gga
 val ala asp asp val ala ala ala ala ile gly leu val asp leu leu leu ala ser gly
 1261/421
 ggc gat ctg gtg acg gtg cta att ggc gcc gcc gta acc gaa gac gtg gct gtc gtc ctg
 gly asp leu val thr val leu ile gly ala gly val thr glu asp val ala val val leu
 1321/441
 gaa cgg cat gtg cac gac cac cat cca ggc acc gag ctg gtc tcc tac cgc acc gga cac
 glu arg his val his asp his his pro gly thr glu leu val ser tyr arg thr gly his
 1381/461
 cgc gcc gac gcg ctg ctg atc ggg gtc gag tag
 arg gly asp ala leu leu ile gly val glu AMB

SEQ ID N° 41S (suite)

FIGURE 41S (suite)
 FEUILLE DE REMPLACEMENT (REGLE 26)

134/185

Seq41T comprenant seq 41F et seq 41S

1/1 31/11
tta ggc tgc ggg cgc ggg ctg gcg cgg agg agg tgt gtt gcg gag gag gtg tgt tgt agt
leu gly ser gly arg gly leu ala arg arg arg cys val ala glu glu val cys cys ser
AMB ala arg gly ala gly trp arg gly gly gly val leu arg arg arg cys val val val
arg leu gly ala arg ala gly ala glu glu val cys cys gly gly gly val leu AMB trp
61/21 91/31
ggg gac ggc gga tgc gcc gtt gga cgc ctc ggc ctt gcg gga ctg ggc aca cgc cgt cgt
gly asp gly gly ser ala val gly arg leu gly leu ala gly leu gly thr arg arg arg
gly thr ala asp arg pro leu asp ala ser ala leu arg asp trp ala his ala val val
gly arg arg ile gly arg trp thr pro arg pro cys gly thr gly his thr pro ser ser
121/41 151/51
cag cga tct gat cct cca cat cga cga gat caa ccg gct caa tgt gtt ccc ggt cgc tga
gln arg ser asp pro pro his arg arg asp gln pro ala gln cys val pro gly arg OPA
ser asp leu ile leu his ile asp glu ile asn arg leu asn val phe pro val ala asp
ala ile OPA ser ser thr ser thr arg ser thr gly ser met cys ser arg ser leu thr
181/61 211/71
ctc cga tac cgg cgt caa cat gct gtt cac cat gcg tgc cgc ggt cgt aga agc tga ttt
leu arg tyr arg arg gln his ala val his his ala cys arg gly arg arg ser OPA phe
ser asp thr gly val asn met leu phe thr met arg ala ala val val glu ala asp leu
pro ile pro ala ser thr cys cys ser pro cys val pro arg ser AMB lys leu ile cys
241/81 271/91
gca cgc gaa ttc gca ggc tga cgc cga aga cgt ggc gcg ggt tgc ggc cgc tct cgc ggc
ala arg glu phe ala gly OPA arg arg arg arg gly ala gly cys gly arg ser arg gly
his ala asn ser gln ala asp ala glu asp val ala arg val ala ala leu ala ala
thr arg ile arg arg leu thr pro lys thr trp arg gly leu arg pro leu ser arg pro
301/101 331/111
cgg cgc gcg ttg aac gga gct cgc ggc aac tcc ggc gtg atc ctg tcc cag atc ctg cgc
arg arg ala leu asn gly ala arg gly asn ser gly val ile leu ser gln ile leu arg
gly ala arg OPA thr glu leu ala ala thr pro ala OPA ser cys pro arg ser cys ala
ala arg val glu arg ser ser arg gln leu arg arg asp pro val pro asp pro ala arg
361/121 391/131
ggg atc gca gag gtg acc gcg act gcg gcc gcc gcc tct ggc gcg gta ttg cgg gcg gtc
gly ile ala glu val thr ala thr ala ala ala ala ser gly ala val leu arg ala val
gly ser gln arg OPA pro arg leu arg pro pro pro leu ala arg tyr cys gly arg ser
asp arg arg gly asp arg asp cys gly arg arg leu trp arg gly ile ala gly gly arg
421/141 451/151
gac gcc aac gcc ctc ggg gcc gcg ttg tgg cgc gcc gtc gag ttg gtc gtc gcg tgc atg
asp ala asn ala leu gly ala ala leu trp arg gly val glu leu val val ala ser met
thr pro thr pro ser gly pro arg cys gly ala ala ser ser trp ser ser arg arg trp
arg gln arg pro arg gly arg val val ala arg arg arg val gly arg arg val asp gly
481/161 511/171
ggg ggc gtg gag gtg ccg gga act atc gtc tgc gtg ctg cgg gcc gcc gcc gga gcc gtc
gly gly val glu val pro gly thr ile val ser val leu arg ala ala ala gly ala val
val ala trp arg cys arg glu leu ser ser arg cys cys gly pro pro pro glu pro ser
trp arg gly gly ala gly asn tyr arg leu gly ala ala gly arg arg arg ser arg arg
541/181 571/191
gac cag tgc gcg cac gag ggg ttg gcc ggt gcg gtc acc gcc gcc ggt gac gcg gcg gtc
asp gln cys ala his glu gly leu ala gly ala val thr ala ala gly asp ala ala val
thr ser ala arg thr arg gly trp pro val arg ser pro pro pro val thr arg arg ser
pro val arg ala arg gly val gly arg cys gly his arg arg arg OPA arg gly gly his
601/201 631/211
atc gcg ctg gaa aag acc ccc gaa cag ctt gac gtg ctc gcc gat gcg ggc gcg gtg gac
ile ala leu glu lys thr pro glu gln leu asp val leu ala asp ala gly ala val asp
ser arg trp lys arg pro pro asn ser leu thr cys ser pro met arg ala arg trp thr
arg ala gly lys asp pro arg thr ala OPA arg ala arg arg cys gly arg gly gly arg
661/221 691/231
gcc gcc gga cgg gcc ctg ctg gtt ctg ctg gcg tgc gcc tcc acc atc tgc ggg cag
ala gly gly arg gly leu leu val leu leu asp ala leu arg ser thr ile cys gly gln
pro ala asp gly ala cys trp phe cys trp thr arg cys ala pro pro ser ala gly arg
arg arg thr gly pro ala gly ser ala gly arg val ala leu his his leu arg ala gly

SEQ ID N° 41T

FEUILLE DE REMPLACEMENT (REGLE 26)

135/185

721/241 751/251
gca cct gcc cgg gcg gtc tac gaa ccc tcg ccg cgc gcg ttg ccg acc gac acg gct acc
ala pro ala arg ala val tyr glu pro ser pro arg ala leu pro thr asp thr ala thr
his leu pro gly arg ser thr asn pro arg arg ala arg cys arg pro thr arg leu pro
thr cys pro gly gly leu arg thr leu ala ala arg val ala asp arg his gly tyr pro
781/261 811/271
caa cgc ccc gcc ccg caa ttc gag gtg atg tat ctg ttg gcg gta tgt gat gct gca gcg
gln arg pro ala pro gln phe glu val met tyr leu leu ala val cys asp ala ala ala
asn ala pro pro arg asn ser arg OPA cys ile cys trp arg tyr val met leu gln arg
thr pro arg pro ala ile arg gly asp val ser val gly gly met OPA cys cys ser gly
841/281 871/291
gcg gac cag ttg ccg gat cga ctc aag gaa ttg ggt gag tcg gtg gcc atc gcc gct gct
ala asp gln leu arg asp arg leu lys glu leu gly glu ser val ala ile ala ala ala
arg thr ser cys gly ile asp ser arg asn trp val ser arg trp pro ser pro leu leu
gly pro val ala gly ser thr gln gly ile gly OPA val gly gly his arg arg cys ser
901/301 931/311
ccg ccc gac agc tac tcc gta cac gtc cac acc gac gac gcc ggt gcc gcc gtg gaa gcc
pro pro asp ser tyr ser val his val his thr asp asp ala gly ala ala val glu ala
arg pro thr ala thr pro tyr thr ser thr thr pro thr thr pro val pro pro trp lys pro
ala arg gln leu leu arg thr arg pro his arg arg arg cys arg arg gly ser arg
961/321 991/331
gga ttg gcg gtg ggg cga gtt agc ccg atc gtg atc tcg gcg ctc ggt tcc ggg acc agc
gly leu ala val gly arg val ser arg ile val ile ser ala leu gly ser gly thr ser
asp trp arg trp gly glu leu ala gly ser OPA ser arg arg ser val pro gly pro ala
ile gly gly gly ala ser AMB pro asp arg asp leu gly ala arg phe arg asp gln arg
1021/341 1051/351
gga ttg ccg gcc ggt gcc tgg acg ccg gcc cgc gcc gtg ctg gcg gtc gtc gac gcc gac
gly leu pro ala gly gly trp thr arg gly arg ala val leu ala val val asp gly asp
asp cys arg pro val ala gly arg gly ala ala pro cys trp arg ser ser thr ala thr
ile ala gly arg trp leu asp ala gly pro arg arg ala gly gly arg arg arg arg
1081/361 1111/371
ggt gcc gcc gag ctg ttc gcc ggg gag gcc gcc tgc gtg ctg cga ccg ggt cca gac gcc
gly ala ala glu leu phe ala gly glu gly ala cys val leu arg pro gly pro asp ala
val pro pro ser cys ser pro gly arg ala pro ala cys cys asp arg val gln thr pro
cys arg arg ala val arg arg gly gly arg leu arg ala ala thr gly ser arg arg arg
1141/381 1171/391
gtg aca ccg gcc gcc gat atc agt gcc cac cag ctg gcg gcc gtg gta gac acc gcc
val thr pro ala ala asp ile ser ala his gln leu val arg ala val val asp thr gly
OPA his arg pro pro ile ser val pro thr ser trp cys gly pro trp AMB thr pro ala
asp thr gly arg arg tyr gln cys pro pro ala gly ala gly arg gly arg his arg arg
1201/401 1231/411
gcc gcg cac gtg atg gtg ctg ccc aat gcc tat gtg gcc gcc gaa gaa ctg gtg gcc ggg
ala ala his val met val leu pro asn gly tyr val ala ala glu glu leu val ala gly
pro arg thr OPA trp cys cys pro met ala met trp pro pro lys asn trp trp pro gly
arg ala arg asp gly ala ala gln trp leu cys gly arg arg arg thr gly gly arg val
1261/421 1291/431
tgt acc gcg gcg atc gcc tgg gcc gtc gac gtg gta ccc gtg ccg acc gga tcg atg gtg
cys thr ala ala ile gly trp gly val asp val val pro val pro thr gly ser met val
val pro arg arg ser ala gly ala ser thr trp tyr pro cys arg pro asp arg trp cys
tyr arg gly asp arg leu gly arg arg gly thr arg ala asp arg ile asp gly ala
1321/441 1351/451
cag ggg ttg gcc gcg ctg gcc gtg cat gac gcg gcc cgc cag gcc gtc gac gac gcc tac
gln gly leu ala ala leu ala val his asp ala ala arg gln ala val asp asp gly tyr
arg gly trp pro arg trp pro cys met thr arg pro ala arg pro ser thr thr ala thr
gly val gly arg ala gly arg ala OPA arg gly pro pro gly arg arg arg arg leu gln
1381/461 1411/471
agc atg gcc cgt gcc gcc ggt gct tcc ccg cac gga tcg gtg cgc att gcc acc caa aag
ser met ala arg ala ala gly ala ser arg his gly ser val arg ile ala thr gln lys
ala trp pro val pro pro val leu pro gly thr asp arg cys ala leu pro pro lys arg
his gly pro cys arg arg cys phe pro ala arg ile gly ala his cys his pro lys gly

SEQ ID N° 41T (suite 1)

FIGURE 41T (suite 1)
FEUILLE DE REMPLACEMENT (RÈGLE 26)

136/185

1441/481 1471/491
 gcg ctg acc tgg gcc ggt acc tgc aag ccg ggc gac ggt ctg ggt atc gcg ggc gac gag
 ala leu thr trp ala gly thr cys lys pro gly asp gly leu gly ile ala gly asp glu
 arg OPA pro gly pro val pro ala ser arg ala thr val trp val ser arg ala thr arg
 ala asp leu gly arg tyr leu gln ala gly arg arg ser gly tyr arg gly arg arg gly
 1501/501 1531/511
 gtg ctg atc gtc gcc gac gat gtc gcc gcg gcg gcc atc ggt ctg gtc gac ctg ttg ttg
 val leu ile val ala asp asp val ala ala ala ile gly leu val asp leu leu leu
 cys OPA ser ser pro thr met ser pro arg arg pro ser val trp ser thr cys cys trp
 ala asp arg arg arg arg cys arg arg gly gly his arg ser gly arg pro val val gly
 1561/521 1591/531
 gca tcg gga ggc gat ctg gtg acg gtg cta att ggc gcc ggc gta acc gaa gac gtg gct
 ala ser gly gly asp leu val thr val leu ile gly ala gly val thr glu asp val ala
 his arg glu ala ile trp OPA arg cys OCH leu ala pro ala OCH pro lys thr trp leu
 ile gly arg arg ser gly asp gly ala asn trp arg arg arg asn arg arg arg gly cys
 1621/541 1651/551
 gtc gtc ctg gaa ccg cat gtg cac gac cac cat cca gcc acc gag ctg gtc tcc tac ccg
 val val leu glu arg his val his asp his his pro gly thr glu leu val ser tyr arg
 ser ser trp asn gly met cys thr thr thr ile gln ala pro ser trp ser pro thr ala
 arg pro gly thr ala cys ala arg pro pro ser arg his arg ala gly leu leu pro his
 1681/561 1711/571
 acc gga cac cgc ggc gac gcg ctg ctg atc ggg gtc gag tag
 thr gly his arg gly asp ala leu leu ile gly val glu AMB
 pro asp thr ala ala thr arg cys OPA ser gly ser ser
 arg thr pro arg arg arg ala ala asp arg gly arg val

SEQ ID N° 41T (suite 2)

FIGURE 41T (suite 2)

1/1 31/11
 GCC GGT AAC GCC GCG TCC CAG TGC TAT CCG TCC GCC GGA CCG CCC GAA ACA TCA GCG GCG
 ala gly asn ala ala ser gln cys tyr pro ser ala gly pro pro glu thr ser ala ala
 61/21 91/31
 GGC GCC CCG GTC GGC CGC GGC CGG GCT CGA CCC GCT CCA CCT GGC CAT CAG CGA CCA GGT
 gly ala pro val gly arg gly arg ala arg pro ala pro pro gly his gln arg pro gly
 121/41 151/51
 TAT CGA GGT GGA AGC GGA CGG TGT TGG GAT GCA CGC CCA ACT TGC CGG CGA TCG CGG CGA
 tyr arg gly gly ser gly arg cys trp asp ala arg pro thr cys arg arg ser arg arg
 181/61 211/71
 TGC TCA TCG GAA CCC GCG ACG CAC ACA ATG CCC GCA GCA CCG CAC GAC GGC GCC CCA CCG
 cys ser ser glu pro ala thr his thr met pro ala ala pro his asp gly ala pro pro
 241/81 271/91
 GCT CTT GCA GTG ACC TGA TGA TGA CAC TCA CCC CCA TAA GGC TCG TCG GCT GCG CCT GAG
 ala leu ala val thr OPA OPA OPA his ser pro pro OCH gly ser ser ala ala pro glu
 301/101 331/111
 CAA TGC AGT AAG TTT ACA CAA ACG GAC TTG TAA AAA CCT GCG GAG GTG GGG TCT ATG GCC
 gln cys ser lys phe thr gln thr asp leu OCH lys pro ala glu val gly ser met ala
 361/121 391/131
 AAC AAA CGT GGC AAT GCC GGG CAG CCT CTG CCC TTG TCG GAT C
 asn lys arg gly asn ala gly gln pro leu pro leu ser asp

SEQ ID N° 42A

FIGURE 42A

FEUILLE DE REMPLACEMENT (REGLE 26)

137/185

1
1/1 31/11
CCG GTA ACG CCG CGT CCC AGT GCT ATC CGT CCG CCG GAC CGC CCG AAA CAT CAG CGG CGG
pro val thr pro arg pro ser ala ile arg pro pro asp arg pro lys his gln arg arg
61/21 91/31
GCG CCC CCG TCG GCC GCG GCC GGG CTC GAC CCG CTC CAC CTG GCC ATC AGC GAC CAG GTT
ala pro arg ser ala ala ala gly leu asp pro leu his leu ala ile ser asp gln val
121/41 151/51
ATC GAG GTG GAA GCG GAC GGT GTT GGG ATG CAC GCC CAA CTT GCC GGC GAT CGC GGC GAT
ile glu val glu ala asp gly val gly met his ala gln leu ala gly asp arg gly asp
181/61 211/71
GCT CAT CCG AAC CCG CGA CGC ACA CAA TGC CCG CAG CAC CGC ACG ACG GCG CCC CAC CGG
ala his arg asn pro arg arg thr gln cys pro gln his arg thr thr ala pro his arg
241/81 271/91
CTC TTG CAG TGA CCT GAT GAT GAC ACT CAC CCC CAT AAG GCT CGT CCG CTG CGC CTG AGC
leu leu gln opa pro asp asp asp thr his pro his lys ala arg arg leu arg leu ser
301/101 331/111
AAT GCA GTA AGT TTA CAC AAA CGG ACT TGT AAA AAC CTG CCG AGG TGG GGT CTA TGG CCA
asn ala val ser leu his lys arg thr cys lys asn leu arg arg trp gly leu trp pro
361/121 391/131
ACA AAC GTG GCA ATG CCG GGC AGC CTC TGC CCT TGT CGG ATC
thr asn val ala met pro gly ser leu cys pro cys arg ile

SEQ ID N° 42B

FIGURE 42B

1/1 31/11
CGG TAA CGC CGC GTC CCA GTG CTA TCC GTC CGC CGG ACC GCC CGA AAC ATC AGC GGC GGG
arg OCH arg arg val pro val leu ser val arg arg thr ala arg asn ile ser gly gly
61/21 91/31
CGC CCC GGT CCG CCG CCG GGC TCG ACC CGC TCC ACC TGG CCA TCA GCG ACC AGG TTA
arg pro gly arg pro arg pro gly ser thr arg ser thr trp pro ser ala thr arg leu
121/41 151/51
TCG AGG TGG AAG CGG ACG GTG TTG GGA TGC ACG CCC AAC TTG CCG GCG ATC GCG GCG ATG
ser arg trp lys arg thr val leu gly cys thr pro asn leu pro ala ile ala ala met
181/61 211/71
CTC ATC GGA ACC CGC GAC GCA CAC AAT GCC CGC AGC ACC GCA CGA CCG CGC CCC ACC GGC
leu ile gly thr arg asp ala his asn ala arg ser thr ala arg arg arg pro thr gly
241/81 271/91
TCT TGC AGT GAC CTG ATG ATG ACA CTC ACC CCC ATA AGG CTC GTC GGC TGC GCC TGA GCA
ser cys ser asp leu met met thr leu thr pro ile arg leu val gly cys ala opa ala
301/101 331/111
ATG CAG TAA GTT TAC ACA AAC GGA CTT GTA AAA ACC TGC GGA GGT GGG GTC TAT GGC CAA
met gln OCH val tyr thr asn gly leu val lys thr cys gly gly gly val tyr gly gln
361/121 391/131
CAA ACG TGG CAA TGC CCG GCA GCC TCT GCC CTT GTC GGA TC
gln thr trp gln cys arg ala ala ser ala leu val gly

SEQ ID N° 42C

FIGURE 42C

FEUILLE DE REMPLACEMENT (REGLE 26)

138/185

Séquence codante Rv2622 prédite par Cole et al., 1998 (Nature 393:537-544) et contenant seq42A:

```

1/1                               31/11
atg gcc aac aaa cgt ggc aat gcc ggg cag cct ctg ccc ttg tcg gat cga gac gac gac
Met ala asn lys arg gly asn ala gly gln pro leu pro leu ser asp arg asp asp asp
61/21                               91/31
cac atg cag ggg cac tgg ctg ctg gcc cgg ctg ggc aag cgg gtg ctg cgt ccc ggc ggc
his met gln gly his trp leu leu ala arg leu gly lys arg val leu arg pro gly gly
121/41                               151/51
gtc gaa ctc acc cgg aca ctg ctg gcc cgc gcc gag gtg acc gac gcc gac gtg ctc gag
val glu leu thr arg thr leu leu ala arg ala glu val thr asp ala asp val leu glu
181/61                               211/71
ctg gca ccg ggc ctg ggc cgc acc gca gcc gaa atc ttg gcc cgc aac ccg cgg tcg tac
leu ala pro gly leu gly arg thr ala ala glu ile leu ala arg asn pro arg ser tyr
241/81                               271/91
gtg ggg gcg gag agc gat ccc aac gcg gcc aac ctg gtc cga cac gtt ctc gcc ggc cgc
val gly ala glu ser asp pro asn ala ala asn leu val arg his val leu ala gly arg
301/101                               331/111
ggc gac gtc cgg gtc acc gac gcg gcc gat acc gga tta tcc gac gcc agc gcc gat gtc
gly asp val arg val thr asp ala ala asp thr gly leu ser asp ala ser ala asp val
361/121                               391/131
gtc atc ggc gag gcg atg ctg acc atg caa ggc aac gcg gct aaa cac acg atc gtc gcc
val ile gly glu ala met leu thr met gln gly asn ala ala lys his thr ile val ala
421/141                               451/151
gag gcg gcg cgg gtg ctg agg ccg ggt gcc cgc tac gcg att cac gaa cta gcg ctg gtg
glu ala ala arg val leu arg pro gly gly arg tyr ala ile his glu leu ala leu val
481/161                               511/171
ccg gac gac gtc gca gag cag gtc cgc acc gac ctg cgg cag tcg ctg gcc cgc gcg ctc
pro asp asp val ala glu gln val arg thr asp leu arg gln ser leu ala arg ala leu
541/181                               571/191
aag gtc aat gcg cgt ccg ctg acc gtt gcg gaa tgg tcg cac ctc tta gcg ggc cat gga
lys val asn ala arg pro leu thr val ala glu trp ser his leu leu ala gly his gly
601/201                               631/211
ctg gtc gtc gaa cac gtt gtc acc gct tcc atg gcg ttg tta caa ccg cga cgg gtg atc
leu val val glu his val val thr ala ser met ala leu leu gln pro arg arg val ile
661/221                               691/231
gct gac gaa ggc ctc ctg ggt gcg ctg cgg ttc gcc gga aac ctg ctc atc cat cgt gcc
ala asp glu gly leu leu gly ala leu arg phe ala gly asn leu leu ile his arg ala
721/241                               751/251
gcg cgt cgg cga gtc ctg ttg atg cgc cac aca ttc cgc agg cat cgt gaa cgc ttg aca
ala arg arg arg val leu leu met arg his thr phe arg arg his arg glu arg leu thr
781/261                               811/271
gcc gtc gcc att gtc gcg cac aaa ccg cac gtc gat tcg tga
ala val ala ile val ala his lys pro his val asp ser OPA

```

SEQ ID N° 42D

FIGURE 42D

139/185

ORF d'après Cole et al., 1998 (Nature 393:537-544) et contenant Rv2622

```

1/1                                31/11
taa aaa cct gcg gag gtg ggg tct atg gcc aac aaa cgt ggc aat gcc ggg cag cct ctg
OCH lys pro ala glu val gly ser met ala asn lys arg gly asn ala gly gln pro leu
61/21                                91/31
ccc ttg tcg gat cga gac gac gac cac atg cag ggg cac tgg ctg ctg gcc cgg ctg ggc
pro leu ser asp arg asp asp asp his met gln gly his trp leu leu ala arg leu gly
121/41                                151/51
aag cgg gtg ctg cgt ccc ggc ggc gtc gaa ctc acc cgg aca ctg ctg gcc cgc gcc gag
lys arg val leu arg pro gly gly val glu leu thr arg thr leu leu ala arg ala glu
181/61                                211/71
gtg acc gac gcc gac gtg ctc gag ctg gca ccg ggc ctg ggc cgc acc gca gcc gaa atc
val thr asp ala asp val leu glu leu ala pro gly leu gly arg thr ala ala glu ile
241/81                                271/91
ttg gcc cgc aac ccg cgg tcg tac gtg ggg gcg gag agc gat ccc aac gcg gcc aac ctg
leu ala arg asn pro arg ser tyr val gly ala glu ser asp pro asn ala ala asn leu
301/101                               331/111
gtc cga cac gtt ctc gcc ggc cgc ggc gac gtc cgg gtc acc gac gcg gcc gat acc gga
val arg his val leu ala gly arg gly asp val arg val thr asp ala ala asp thr gly
361/121                               391/131
tta tcc gac gcc agc gcc gat gtc gtc atc ggc gag gcg atg ctg acc atg caa ggc aac
leu ser asp ala ser ala asp val val ile gly glu ala met leu thr met gln gly asn
421/141                               451/151
gcg gct aaa cac acg atc gtc gcc gag gcg gcg cgg gtg ctg agg ccg ggt ggc cgc tac
ala ala lys his thr ile val ala glu ala ala arg val leu arg pro gly gly arg tyr
481/161                               511/171
gcg att cac gaa cta gcg ctg gtg ccg gac gac gtc gca gag cag gtc cgc acc gac ctg
ala ile his glu leu ala leu val pro asp asp val ala glu gln val arg thr asp leu
541/181                               571/191
cgg cag tcg ctg gcc cgc gcg ctc aag gtc aat gcg cgt ccg ctg acc gtt gcg gaa tgg
arg gln ser leu ala arg ala leu lys val asn ala arg pro leu thr val ala glu trp
601/201                               631/211
tcg cac ctc tta gcg ggc cat gga ctg gtc gtc gaa cac gtt gtc acc gct tcc atg gcg
ser his leu leu ala gly his gly leu val val glu his val val thr ala ser met ala
661/221                               691/231
ttg tta caa ccg cga cgg gtg atc gct gac gaa ggc ctc ctg ggt gcg ctg cgg ttc gcc
leu leu gln pro arg arg val ile ala asp glu gly leu leu gly ala leu arg phe ala
721/241                               751/251
gga aac ctg ctc atc cat cgt gcc gcg cgt cgg cga gtc ctg ttg atg cgc cac aca ttc
gly asn leu leu ile his arg ala ala arg arg arg val leu leu met arg his thr phe
781/261                               811/271
cgc agg cat cgt gaa cgc ttg aca gcc gtc gcc att gtc gcg cac aaa ccg cac gtc gat
arg arg his arg glu arg leu thr ala val ala ile val ala his lys pro his val asp
841/281
tcg tga
ser OPA

```

SEQ ID N° 42F

FIGURE 42F

140/185

```

1/1                               31/11
atc gcg cgt gac atc gat gac cag ggt cgg ctg tgt ctg gac gtc ggc ggt cga acg gta
ile ala arg asp ile asp asp gln gly arg leu cys leu asp val gly gly arg thr val
61/21                             91/31
gtt gtt tca gcg ggc gac gtg gtg cat ttg cgt taa ctc gcg cgg agc tgg cgt ccc caa
val val ser ala gly asp val val his leu arg OCH leu ala arg ser trp arg pro gln
121/41                           151/51
aag att aag gtc gcg ggc atg agc tat ccg gag aat gtc ctg gcc gct ggc gag cag gtc
lys ile lys val ala gly met ser tyr pro glu asn val leu ala ala gly glu gln val
181/61                           211/71
gtt ctg cac cgc cat ccg cac tgg aat cgc tta atc tgg ccc gtc gtg gtg ctg gtc ttg
val leu his arg his pro his trp asn arg leu ile trp pro val val val leu val leu
241/81                           271/91
ctg acc ggg ttg gcg gcg ttc ggg tcc gga ttc gtc aac tcg aca cct tgg cag cag atc
leu thr gly leu ala ala phe gly ser gly phe val asn ser thr pro trp gln gln ile

```

SEQ ID N° 43A

FIGURE 43A

```

1/1                               31/11
tcg cgc gtg aca tcg atg acc agg gtc ggc tgt gtc tgg acg tcg gcg gtc gaa cgg tag
ser arg val thr ser met thr arg val gly cys val trp thr ser ala val glu arg AMB
61/21                             91/31
ttg ttt cag cgg gcg acg tgg tgc att tgc gtt aac tcg cgc gga gct ggc gtc ccc aaa
leu phe gln arg ala thr trp cys ile cys val asn ser arg gly ala gly val pro lys
121/41                           151/51
aga tta agg tcg cgg gca tga gct atc ccg aga atg tcc tgg ccg ctg gcg agc agg tcg
arg leu arg ser arg ala OPA ala ile arg arg met ser trp pro leu ala ser arg ser
181/61                           211/71
ttc tgc acc gcc atc cgc act gga atc gct taa tct ggc ccg tcg tgg tgc tgg tct tgc
phe cys thr ala ile arg thr gly ile ala OCH ser gly pro ser trp cys trp ser cys
241/81                           271/91
tga ccg ggt tgg cgg cgt tcg ggt ccg gat tcg tca act cga cac ctt ggc agc aga tc
OPA pro gly trp arg arg ser gly pro asp ser ser thr arg his leu gly ser arg

```

SEQ ID N° 43B

FIGURE 43B

141/185

```

1/1                               31/11
cgc gcg tga cat cga tga cca ggg tcg gct gtg tct gga cgt cgg cgg tcg aac ggt agt
arg ala OPA his arg OPA pro gly ser ala val ser gly arg arg arg ser asn gly ser
61/21                               91/31
tgt ttc agc ggg cga cgt ggt gca ttt gcg tta act cgc gcg gag ctg gcg tcc cca aaa
cys phe ser gly arg arg gly ala phe ala leu thr arg ala glu leu ala ser pro lys
121/41                               151/51
gat taa ggt cgc ggg cat gag cta tcc gga gaa tgt cct ggc cgc tgg cga gca ggt cgt
asp OCH gly arg gly his glu leu ser gly glu cys pro gly arg trp arg ala gly arg
181/61                               211/71
tct gca ccg cca tcc gca ctg gaa tcg ctt aat ctg gcc cgt cgt ggt gct ggt ctt gct
ser ala pro pro ser ala leu glu ser leu asn leu ala arg arg gly ala gly leu ala
241/81                               271/91
gac cgg gtt ggc ggc gtt cgg gtc cgg att cgt caa ctc gac acc ttg gca gca gat c
asp arg val gly gly val arg val arg ile arg gln leu asp thr leu ala ala asp

```

SEQ ID N° 43C

FIGURE 43C

Séquence codante Rv3278c prédite par Cole et al., 1998 (Nature 393:537-544) et contenant seq43A:

```

1/1                               31/11
atg agc tat ccg gag aat gtc ctg gcc gct ggc gag cag gtc gtt ctg cac cgc cat ccg
Met ser tyr pro glu asn val leu ala ala gly glu gln val val leu his arg his pro
61/21                               91/31
cac tgg aat cgc tta atc tgg ccc gtc gtg gtg ctg gtc ttg ctg acc ggg ttg gcg gcg
his trp asn arg leu ile trp pro val val val leu val leu leu thr gly leu ala ala
121/41                               151/51
ttc ggg tcc gga ttc gtc aac tcg aca cct tgg cag cag atc gct aag aac gtg att cac
phe gly ser gly phe val asn ser thr pro trp gln gln ile ala lys asn val ile his
181/61                               211/71
gcg gtc atc tgg ggg atc tgg ttg gtg atc gtc ggc tgg ctc acg ctg tgg cca ttc ctg
ala val ile trp gly ile trp leu val ile val gly trp leu thr leu trp pro phe leu
241/81                               271/91
agc tgg ctg acc aca cat ttc gtg gtg acc aac cgg cgg gtg atg ttc cgg cat ggt gtg
ser trp leu thr thr his phe val val thr asn arg arg val met phe arg his gly val
301/101                               331/111
ctg acc cgc agc ggg atc gac ata ccg cta gca cgg atc aac agc gtg gag ttc cgg gac
leu thr arg ser gly ile asp ile pro leu ala arg ile asn ser val glu phe arg asp
361/121                               391/131
cgg atc ttc gag cgg att ttt cgc acc ggg acg ttg att atc gag tcc gcg tca caa gat
arg ile phe glu arg ile phe arg thr gly thr leu ile ile glu ser ala ser gln asp
421/141                               451/151
ccg ctc gag ttc tac aac att ccg cgc ctg cgg gag gtg cat gcg ttg ctg tat cac gag
pro leu glu phe tyr asn ile pro arg leu arg glu val his ala leu leu tyr his glu
481/161                               511/171
gtt ttc gac acc ctg ggc tcc gac gag tcg ccc agc tga
val phe asp thr leu gly ser asp glu ser pro ser OPA

```

SEQ ID N° 43D

FIGURE 43D

FEUILLE DE REMPLACEMENT (REGLE 26)

142/185

ORF d'après Cole et al., 1998 (Nature 393:537-544) et contenant Rv3278c

```

1/1                                31/11
taa ctc gcg cgg agc tgg cgt ccc caa aag att aag gtc gcg ggc atg agc tat ccg gag
OCH leu ala arg ser trp arg pro gln lys ile lys val ala gly met ser tyr pro glu
61/21                                91/31
aat gtc ctg gcc gct ggc gag cag gtc gtt ctg cac cgc cat ccg cac tgg aat cgc tta
asn val leu ala ala gly glu gln val val leu his arg his pro his trp asn arg leu
121/41                                151/51
atc tgg ccc gtc gtg gtg ctg gtc ttg ctg acc ggg ttg gcg gcg ttc ggg tcc gga ttc
ile trp pro val val val leu val leu leu thr gly leu ala ala phe gly ser gly phe
181/61                                211/71
gtc aac tcg aca cct tgg cag cag atc gct aag aac gtg att cac gcg gtc atc tgg ggg
val asn ser thr pro trp gln gln ile ala lys asn val ile his ala val ile trp gly
241/81                                271/91
atc tgg ttg gtg atc gtc ggc tgg ctc acg ctg tgg cca ttc ctg agc tgg ctg acc aca
ile trp leu val ile val gly trp leu thr leu trp pro phe leu ser trp leu thr thr
301/101                                331/111
cat ttc gtg gtg acc aac cgg cgg gtg atg ttc cgg cat ggt gtg ctg acc cgc agc ggg
his phe val val thr asn arg arg val met phe arg his gly val leu thr arg ser gly
361/121                                391/131
atc gac ata ccg cta gca cgg atc aac agc gtg gag ttc cgg gac cgg atc ttc gag cgg
ile asp ile pro leu ala arg ile asn ser val glu phe arg asp arg ile phe glu arg
421/141                                451/151
att ttt cgc acc ggg acg ttg att atc gag tcc gcg tca caa gat ccg ctc gag ttc tac
ile phe arg thr gly thr leu ile ile glu ser ala ser gln asp pro leu glu phe tyr
481/161                                511/171
aac att ccg cgc ctg cgg gag gtg cat gcg ttg ctg tat cac gag gtt ttc gac acc ctg
asn ile pro arg leu arg glu val his ala leu leu tyr his glu val phe asp thr leu
541/181
ggc tcc gac gag tcg ccc agc tga
gly ser asp glu ser pro ser OPA

```

SEQ ID N° 43F

FIGURE 43F

143/185

```

1/1                                31/11
gcc aag atg gat gtc tac caa cgc acc gcc gcc ggc tgg cag ccg ctc aag acc ggt atc
ala lys met asp val tyr gln arg thr ala ala gly trp gln pro leu lys thr gly ile
61/21                                91/31
acc acc cat atc ggt tcg gcg ggc atg gcg ccg gaa gcc aag agc gga tat ccg gcc act
thr thr his ile gly ser ala gly met ala pro glu ala lys ser gly tyr pro ala thr
121/41                                151/51
ccg atg ggg gtt tac agc ctg gac tcc gct ttt ggc acc gcg ccg aat ccc ggt ggc ggg
pro met gly val tyr ser leu asp ser ala phe gly thr ala pro asn pro gly gly gly
181/61                                211/71
ttg ccg tat acc caa gtc gga ccc aat cac tgg tgg agt ggc gac gac aat agc ccc acc
leu pro tyr thr gln val gly pro asn his trp trp ser gly asp asp asn ser pro thr
241/81                                271/91
ttt aac tcc atg cag gtc tgt cag aag tcc cag tgc ccg ttc agc acg gcc gac agc gag
phe asn ser met gln val cys gln lys ser gln cys pro phe ser thr ala asp ser glu
301/101                                331/111
aac ctg caa atc ccg cag tac aag cat tcg gtc gtg atg ggc gtc aac aag gcc aag gtc
asn leu gln ile pro gln tyr lys his ser val val met gly val asn lys ala lys val
361/121                                391/131
cca ggc aaa ggc tcc gcg ttc ttc ttt cac acc acc gac ggc ggg ccc acc gcg ggt tgt
pro gly lys gly ser ala phe phe phe his thr thr asp gly gly pro thr ala gly cys
421/141
gtg gcg atc
val ala ile

```

SEQ ID N° 44A

FIGURE 44A

```

1/1                                31/11
cca aga tgg atg tct acc aac gca ccg ccg ccg gct ggc agc cgc tca aga ccg gta tca
pro arg trp met ser thr asn ala pro pro pro ala gly ser arg ser arg pro val ser
61/21                                91/31
cca ccc ata tcg gtt ccg cgg gca tgg gcg ccg aag cca aga gcg gat atc ccg cca ctc
pro pro ile ser val arg arg ala trp arg arg lys pro arg ala asp ile arg pro leu
121/41                                151/51
cga tgg ggg ttt aca gcc tgg act ccg ctt ttg gca ccg cgc cga atc ccg gtg gcg ggt
arg trp gly phe thr ala trp thr pro leu leu ala pro arg arg ile pro val ala gly
181/61                                211/71
tgc cgt ata ccc aag tcg gac cca atc act ggt gga gtg gcg acg aca ata gcc cca cct
cys arg ile pro lys ser asp pro ile thr gly gly val ala thr thr ile ala pro pro
241/81                                271/91
tta act cca tgc agg tct gtc aga agt ccc agt gcc cgt tca gca ccg ccg aca gcg aga
leu thr pro cys arg ser val arg ser pro ser ala arg ser ala arg pro thr ala arg
301/101                                331/111
acc tgc aaa tcc cgc agt aca agc att ccg tcg tga tgg gcg tca aca agg cca agg tcc
thr cys lys ser arg ser thr ser ile arg ser opa trp ala ser thr arg pro arg ser
361/121                                391/131
cag gca aag gct ccg cgt tct tct ttc aca cca ccg acg gcg ggc cca ccg ccg gtt gtg
gln ala lys ala pro arg ser ser phe thr pro pro thr ala gly pro pro arg val val
421/141
tgg cga tc
trp arg

```

SEQ ID N° 44B

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 44B

144/185

1/1
 caa gat gga tgt cta cca acg cac cgc cgc cgg ctg gca gcc gct caa gac cgg tat cac
 gln asp gly cys leu pro thr his arg arg arg leu ala ala ala gln asp arg tyr his
 61/21
 31/11
 cac cca tat cgg ttc ggc ggg cat ggc gcc gga agc caa gag cgg ata tcc ggc cac tcc
 his pro tyr arg phe gly gly his gly ala gly ser gln glu arg ile ser gly his ser
 121/41
 91/31
 gat ggg ggt tta cag cct gga ctc cgc ttt tgg cac cgc gcc gaa tcc cgg tgg cgg gtt
 asp gly gly leu gln pro gly leu arg phe trp his arg ala glu ser arg trp arg val
 181/61
 151/51
 gcc gta tac cca agt cgg acc caa tca ctg gtg gag tgg cga cga caa tag ccc cac ctt
 ala val tyr pro ser arg thr gln ser leu val glu trp arg arg gln AMB pro his leu
 241/81
 211/71
 taa ctc cat gca ggt ctg tca gaa gtc cca gtg ccc gtt cag cac ggc cga cag cga gaa
 OCH leu his ala gly leu ser glu val pro val pro val gln his gly arg gln arg glu
 301/101
 271/91
 cct gca aat ccc gca gta caa gca ttc ggt cgt gat ggg cgt caa caa ggc caa ggt ccc
 pro ala asn pro ala val gln ala phe gly arg asp gly arg gln gln gly gln gly pro
 361/121
 331/111
 agg caa agg ctc cgc gtt ctt ctt tca cac cac cga cgg cgg gcc cac cgc ggg ttg tgt
 arg gln arg leu arg val leu leu ser his his arg arg arg ala his arg gly leu cys
 421/141
 ggc gat c
 gly asp

SEQ ID N° 44C

FIGURE 44C

145/185

Séquence codante Rv0309 prédite par Cole et al., 1998 (Nature 393:537-544) et contenant Séq44A:

```

1/1                               31/11
atg agc cga ctc cta gct ttg ctg tgc gct gcg gta tgc acg ggc tgc gtt gct gtg gtt
Met ser arg leu leu ala leu leu cys ala ala val cys thr gly cys val ala val val
61/21                               91/31
ctc gcg cca gtg agc ctg gcc gtc gtc aac ccg tgg ttc gcg aac tcg gtc ggc aat gcc
leu ala pro val ser leu ala val val asn pro trp phe ala asn ser val gly asn ala
121/41                             151/51
act cag gtg gtt tcg gtg gtg gga acc ggc ggt tcg acg gcc aag atg gat gtc tac caa
thr gln val val ser val val gly thr gly gly ser thr ala lys met asp val tyr gln
181/61                             211/71
cgc acc gcc gcc gcc tgg cag ccg ctc aag acc ggt atc acc acc cat atc ggt tcg gcg
arg thr ala ala gly trp gln pro leu lys thr gly ile thr thr his ile gly ser ala
241/81                             271/91
ggc atg gcg ccg gaa gcc aag agc gga tat ccg gcc act ccg atg ggg gtt tac agc ctg
gly met ala pro glu ala lys ser gly tyr pro ala thr pro met gly val tyr ser leu
301/101                           331/111
gac tcc gct ttt gcc acc gcg ccg aat ccc ggt gcc ggg ttg ccg tat acc caa gtc gga
asp ser ala phe gly thr ala pro asn pro gly gly gly leu pro tyr thr gln val gly
361/121                           391/131
ccc aat cac tgg tgg agt gcc gac gac aat agc ccc acc ttt aac tcc atg cag gtc tgt
pro asn his trp trp ser gly asp asp asn ser pro thr phe asn ser met gln val cys
421/141                           451/151
cag aag tcc cag tgc ccg ttc agc acg gcc gac agc gag aac ctg caa atc ccg cag tac
gln lys ser gln cys pro phe ser thr ala asp ser glu asn leu gln ile pro gln tyr
481/161                           511/171
aag cat tcg gtc gtg atg gcc gtc aac aag gcc aag gtc cca gcc aaa gcc tcc gcg ttc
lys his ser val val met gly val asn lys ala lys val pro gly lys gly ser ala phe
541/181                           571/191
ttc ttt cac acc acc gac gcc ggg ccc acc gcg ggt tgt gtg gcg atc gac gat gcc acg
phe phe his thr thr asp gly gly pro thr ala gly cys val ala ile asp asp ala thr
601/201                           631/211
ctg gtg cag atc atc cgt tgg ctg ccg cct ggt gcg gtg atc gcg atc gcc aag taa
leu val gln ile ile arg trp leu arg pro gly ala val ile ala ile ala lys OCH

```

SEQ ID N° 44D

FIGURE 44D

146/185

ORF d'après Cole et al., 1998 (Nature 393:537-544) et contenant Rv0309

```

1/1                               31/11
tga gcg atg agc cga ctc cta gct ttg ctg tgc gct gcg gta tgc acg ggc tgc gtt gct
OPA ala met ser arg leu leu ala leu leu cys ala ala val cys thr gly cys val ala
61/21                               91/31
gtg gtt ctc gcg cca gtg agc ctg gcc gtc gtc aac ccg tgg ttc gcg aac tcg gtc ggc
val val leu ala pro val ser leu ala val val asn pro trp phe ala asn ser val gly
121/41                               151/51
aat gcc act cag gtg gtt tcg gtg gtg gga acc ggc ggt tcg acg gcc aag atg gat gtc
asn ala thr gln val val ser val val gly thr gly gly ser thr ala lys met asp val
181/61                               211/71
tac caa cgc acc gcc gcc gcc tgg cag ccg ctc aag acc ggt atc acc acc cat atc ggt
tyr gln arg thr ala ala gly trp gln pro leu lys thr gly ile thr thr his ile gly
241/81                               271/91
tcg gcg ggc atg gcg ccg gaa gcc aag agc gga tat ccg gcc act ccg atg ggg gtt tac
ser ala gly met ala pro glu ala lys ser gly tyr pro ala thr pro met gly val tyr
301/101                               331/111
agc ctg gac tcc gct ttt ggc acc gcg ccg aat ccc ggt ggc ggg ttg ccg tat acc caa
ser leu asp ser ala phe gly thr ala pro asn pro gly gly gly leu pro tyr thr gln
361/121                               391/131
gtc gga ccc aat cac tgg tgg agt ggc gac gac aat agc ccc acc ttt aac tcc atg cag
val gly pro asn his trp trp ser gly asp asp asn ser pro thr phe asn ser met gln
421/141                               451/151
gtc tgt cag aag tcc cag tgc ccg ttc agc acg gcc gac agc gag aac ctg caa atc ccg
val cys gln lys ser gln cys pro phe ser thr ala asp ser glu asn leu gln ile pro
481/161                               511/171
cag tac aag cat tcg gtc gtg atg ggc gtc aac aag gcc aag gtc cca ggc aaa ggc tcc
gln tyr lys his ser val val met gly val asn lys ala lys val pro gly lys gly ser
541/181                               571/191
gcg ttc ttc ttt cac acc acc gac ggc ggc ccc acc gcg ggt tgt gtg gcg atc gac gat
ala phe phe phe his thr thr asp gly gly pro thr ala gly cys val ala ile asp asp
601/201                               631/211
gcc acg ctg gtg cag atc atc cgt tgg ctg ccg cct ggt gcg gtg atc gcg atc gcc aag
ala thr leu val gln ile ile arg trp leu arg pro gly ala val ile ala ile ala lys
661/221
taa
OCH

```

SEQ ID N° 44F

FIGURE 44F

147/185

Fragment cloné en fusion avec phoA

```

1/1                                31/11
gat ctc ccc gga cac cag gtc atc cgg cga gat ggt gat cga ggc tcg gac ccg cag gca
asp leu pro gly his gln val ile arg arg asp gly asp arg gly ser asp pro gln ala
61/21                                91/31
tcc ggt agc cag agg cac cag cat cag caa cat cgc gat ggc cag cat gcc gcg ccg tcg
ser gly ser gln arg his gln his gln gln his arg asp gly gln his ala ala pro ser
121/41                                151/51
ggt cct tgc cac tcg cga tcc ttg gga tga cgg tgg ggc ata gct agc gcg cac cag gtc
gly pro cys his ser arg ser leu gly OPA arg trp gly ile ala ser ala his gln val
181/61                                211/71
atc gtg cca gac cgg gca tgc cgc gtc ggc aag ctg tcg ggc gcg ggt tag agc ggt agc
ile val pro asp arg ala cys arg val gly lys leu ser gly ala gly AMB ser gly ser
241/81                                271/91
gtg cga ccc agg atg gcg aat gct cgg ggg tca ccg gcg aag tgg tag ccg ccg atg atg
val arg pro arg met ala asn ala arg gly ser pro ala lys trp AMB pro arg met met
301/101                                331/111
tcg gtg aag ccc aac cgg cgg tac aac cgc cac gcc cga ttg tcc tca ccg ttg gtc tcc
ser val lys pro asn arg arg tyr asn arg his ala arg leu ser ser pro leu val ser
361/121                                391/131
ggt gtg gag agc agg acg ttg tcc tcg tcg cga ccg gct agc agt ccg ccg gcc aac gcc
gly val glu ser arg thr leu ser ser ser arg pro ala ser ser arg arg ala asn ala
421/141                                451/151
tcc ccg agg cca cgg cct tga gcg cgg gga agg atg tgc aat tca gtc aac tcg aag tag
ser pro arg pro arg pro OPA ala arg gly arg met cys asn ser val asn ser lys AMB
481/161                                511/171
ctg gtc atc agt cgg gcg atc gct agg cgc gga aag ccg ctg cgt tgc aag ccc agt acc
leu val ile ser arg ala ile ala arg arg gly lys pro leu arg cys lys pro ser thr
541/181                                571/191
acc tgc tgt tgc cac cac tgg ccg ggc gcc ccg gga tag ccg tac gcc act ccg agc att
thr cys cys cys his his trp pro gly ala pro gly AMB pro tyr ala thr pro ser ile
601/201                                631/211
ggc gcg ttg ctc agt tcg gcg gcc gac ggc agc gcc gtg gtg tcg gcg gcc tcg gcc tgt
gly ala leu leu ser ser ala ala asp gly ser ala val val ser ala ala ser ala cys
661/221                                691/231
tcg gct gcc gtt acc tcg acg gcc gcg acc gcc tgc cag ccg cgc cgc ccg atg tgc tcc
ser ala ala val thr ser thr ala ala thr ala cys gln pro arg arg arg met cys ser
721/241                                751/251
agc cac att ggg gcg cgc aaa gtc tcg gtg ccc ctg ggg tag cgc atc gcg tcg aca tac
ser his ile gly ala arg lys val ser val pro leu gly AMB arg ile ala ser thr tyr
781/261                                811/271
acc gtc agg gca tca ccg agg cgg cgc tcc ata tcg ctg ggc ggc aga tcg atg agg aat
thr val arg ala ser pro arg arg arg ser ile ser leu gly gly arg ser met arg asn
841/281                                871/291
atc gcc aac gcg cgg tgt cct cct cat gtg atg aac cga tgc gtg ctt gcg cac cag tat
ile ala asn ala arg cys pro pro his val met asn arg cys val leu ala his gln tyr
901/301                                931/311
cgg aca agc cga tga ggc cgc ccg cgc tgg acg ggg ctt gta gcg tat ggc cgt ttc cgc
arg thr ser arg OPA gly arg pro arg trp thr gly leu val ala tyr gly arg phe arg

```

SEQ ID N° 45ZA

FIGURE 45ZA

FEUILLE DE REMPLACEMENT (REGLE 26)

148/185

961/321	991/331
tca gct cgt cgc tgc ggc gcc gcc ggg ata	gaa tcg ccc gcg aac cag tgg tac ggc gca
ser ala arg arg cys gly ala ala gly ile	glu ser pro ala asn gln trp tyr gly ala
1021/341	1051/351
gat tga cct cgt atc atc tga gtt agt tgc	ccg cgc aat ggg cat ccg cgt gtt atc ggt
asp OPA pro arg ile ile OPA val ser cys	pro arg asn gly his pro arg val ile gly
1081/361	1111/371
att acg tga cag tct gtc ggc aag gag gga	cgc atg cca ctc tcc gat cat gag cag cgg
ile thr OPA gln ser val gly lys glu gly	arg met pro leu ser asp his glu gln arg
1141/381	1171/391
atg ctt gac cag atc gag agc gct ctc tac	gcc gaa gat ccc aag ttc gca tcg agt gtc
met leu asp gln ile glu ser ala leu tyr	ala glu asp pro lys phe ala ser ser val
1201/401	1231/411
cgt ggc ggg ggc ttc cgc gca ccg acc gcg	cgg cgg cgc ctg cag ggc gcg gcg ttg ttc
arg gly gly gly phe arg ala pro thr ala	arg arg arg leu gln gly ala ala leu phe
1261/421	1291/431
atc atc ggt ctg ggg atg ttg gtt tcc gcc	gtg gcg ttc aaa gag acc atg atc gga agt
ile ile gly leu gly met leu val ser gly	val ala phe lys glu thr met ile gly ser
1321/441	1351/451
ttc ccg ata ctc agc gtt ttc ggt ttt gtc	gtg atg ttc ggt ggt gtg gtg tat gcc atc
phe pro ile leu ser val phe gly phe val	val met phe gly gly val val tyr ala ile
1381/461	1411/471
acc ggt cct ccg ttg tcc ggc agg atg gat	cgt gcc gga tcg gct gct ggg gct tcg cgc
thr gly pro arg leu ser gly arg met asp	arg gly gly ser ala ala gly ala ser arg
1441/481	1471/491
cag cgt cgt acc aag ggg gcc ggg gcc tca	ttc acc agc cgt atg gaa gat c
gln arg arg thr lys gly ala gly gly ser	phe thr ser arg met glu asp

SEQ ID N° 452A (suite)

FIGURE 452A (suite)

149/185

fragment seq452A en décalage moins 1 pour la phase de lecture

```

1/1                                31/11
atc tcc ccg gac acc agg tca tcc ggc gag atg gtg atc gag gct cgg acc cgc agg cat
ile ser pro asp thr arg ser ser gly glu met val ile glu ala arg thr arg arg his
61/21                                91/31
ccg gta gcc aga ggc acc agc atc agc aac atc gcg atg gcc agc atg ccg cgc cgt cgg
pro val ala arg gly thr ser ile ser asn ile ala met ala ser met pro arg arg arg
121/41                                151/51
gtc ctt gcc act cgc gat cct tgg gat gac ggt ggg gca tag cta gcg cgc acc agg tca
val leu ala thr arg asp pro trp asp asp gly gly ala AMB leu ala arg thr arg ser
181/61                                211/71
tcg tgc cag acc ggg cat gcc gcg tcg gca agc tgt cgg gcg cgg gtt aga gcg gta gcg
ser cys gln thr gly his ala ala ser ala ser cys arg ala arg val arg ala val ala
241/81                                271/91
tgc gac cca gga tgg cga atg ctc ggg ggt cac cgg cga agt ggt agc cgc gga tga tgt
cys asp pro gly trp arg met leu gly gly his arg arg ser gly ser arg gly OPA cys
301/101                                331/111
cgg tga agc cca acc ggc ggt aca acc gcc acg ccc gat tgt cct cac cgt tgg tct ccg
arg OPA ser pro thr gly gly thr thr ala thr pro asp cys pro his arg trp ser pro
361/121                                391/131
gtg tgg aga gca gga cgt tgt cct cgt cgc gac cgg cta gca gtc ggc ggg cca acg cct
val trp arg ala gly arg cys pro arg arg asp arg leu ala val gly gly pro thr pro
421/141                                451/151
ccc cga ggc cac ggc ctt gag cgc ggg gaa gga tgt gca att cag tca act cga agt agc
pro arg gly his gly leu glu arg gly glu gly cys ala ile gln ser thr arg ser ser
481/161                                511/171
tgg tca tca gtc ggg cga tcg cta ggc gcg gaa agc cgc tgc gtt gca agc cca gta cca
trp ser ser val gly arg ser leu gly ala glu ser arg cys val ala ser pro val pro
541/181                                571/191
cct gct gtt gcc acc act ggc cgg gcg ccc cgg gat agc cgt acg cca ctc cga gca ttg
pro ala val ala thr thr gly arg ala pro arg asp ser arg thr pro leu arg ala leu
601/201                                631/211
gcg cgt tgc tca gtt cgg cgg ccg acg gca gcg ccg tgg tgt cgg cgg cct cgg cct gtt
ala arg cys ser val arg arg pro thr ala ala pro trp cys arg arg pro arg pro val
661/221                                691/231
cgg ctg ccg tta cct cga cgg ccg cga ccg cct gcc agc cgc gcc gcc gga tgt gct cca
arg leu pro leu pro arg arg pro arg pro pro ala ser arg ala ala gly cys ala pro
721/241                                751/251
gcc aca ttg ggg cgc gca aag tct cgg tgc ccc tgg ggt agc gca tcg cgt cga cat aca
ala thr leu gly arg ala lys ser arg cys pro trp gly ser ala ser arg arg his thr
781/261                                811/271
ccg tca ggg cat cac cga ggc ggc gct cca tat cgc tgg gcg gca gat cga tga gga ata
pro ser gly his his arg gly gly ala pro tyr arg trp ala ala asp arg OPA gly ile
841/281                                871/291
tcg cca acg cgc ggt gtc ctc ctc atg tga tga acc gat gcg tgc ttg cgc acc agt atc
ser pro thr arg gly val leu leu met OPA OPA thr asp ala cys leu arg thr ser ile
901/301                                931/311
gga caa gcc gat gag gcc gcc cgc gct gga cgg ggc ttg tag cgt atg gcc gtt tcc gct
gly gln ala asp glu ala ala arg ala gly arg gly leu AMB arg met ala val ser ala
961/321                                991/331
cag ctc gtc gct gcg gcg ccg ccg gga tag aat cgc ccg cga acc agt ggt acg gcg cag
gln leu val ala ala ala pro pro gly AMB asn arg pro arg thr ser gly thr ala gln

```

SEQ ID N° 452B

FIGURE 452B

FEUILLE DE REMPLACEMENT (REGLE 26)

150/185

1021/341

att gac ctc gta tca tct gag tta gtt gcc cgc gca atg ggc atc cgc gtg tta tcg gta
 ile asp leu val ser ser glu leu val ala arg ala met gly ile arg val leu ser val

1081/361

tta cgt gac agt ctg tcg gca agg agg gac gca tgc cac tct ccg atc atg agc agc gga
 leu arg asp ser leu ser ala arg arg asp ala cys his ser pro ile met ser ser gly

1141/381

tgc ttg acc aga tcg aga gcg ctc tct acg ccg aag atc cca agt tcg cat cga gtg tcc
 cys leu thr arg ser arg ala leu ser thr pro lys ile pro ser ser his arg val ser

1201/401

gtg gcg ggg get tcc gcg cac cga ccg cgc ggc ggc gcc tgc agg gcg cgg cgt tgt tca
 val ala gly ala ser ala his arg pro arg gly gly ala cys arg ala arg arg cys ser

1261/421

tca tcg gtc tgg gga tgt tgg ttt ccg gcg tgg cgt tca aag aga cca tga tcg gaa gtt
 ser ser val trp gly cys trp phe pro ala trp arg ser lys arg pro OPA ser glu val

1321/441

tcc cga tac tca gcg ttt tcg gtt ttg tcg tga tgt tcg gtg gtg tgg tgt atg cca tca
 ser arg tyr ser ala phe ser val leu ser OPA cys ser val val trp cys met pro ser

1381/461

ccg gtc ctc ggt tgt ccg gca gga tgg atc gtg gcg gat cgg ctg ctg ggg ctt cgc gcc
 pro val leu gly cys pro ala gly trp ile val ala asp arg leu leu gly leu arg ala

1441/481

agc gtc gta cca agg ggg ccg ggg gct cat tca cca gcc gta tgg aag atc
 ser val val pro arg gly pro gly ala his ser pro ala val trp lys ile

1051/351

1111/371

1171/391

1231/411

1291/431

1351/451

1411/471

1471/491

SEQ ID N° 45ZB (suite)

FIGURE 45ZB (suite)

151/185

fragment seq452A en décalage moins 2 pour la phase de lecture

1/1	31/11
tct ccc egg aca cca ggt cat ccg gcg aga tgg tga tgc agg ctc gga ccc gca ggc atc	
ser pro arg thr pro gly his pro ala arg trp OPA ser arg leu gly pro ala gly ile	
61/21	91/31
cgg tag cca gag gca cca gca tca gca aca tgc cga tgg cca gca tgc cgc gcc gtc ggg	
arg AMB pro glu ala pro ala ser ala thr ser arg trp pro ala cys arg ala val gly	
121/41	151/51
tcc ttg cca ctc gcg atc ctt ggg atg acg gtg ggg cat agc tag cgc gca cca ggt cat	
ser leu pro leu ala ile leu gly met thr val gly his ser AMB arg ala pro gly his	
181/61	211/71
cgt gcc aga ccg ggc atg ccg cgt cgg caa gct gtc ggg cgc ggg tta gag cgg tag cgt	
arg ala arg pro gly met pro arg arg gln ala val gly arg gly leu glu arg AMB arg	
241/81	271/91
gcg acc cag gat ggc gaa tgc tgc ggg gtc acc ggc gaa gtg gta gcc gcg gat gat gtc	
ala thr gln asp gly glu cys ser gly val thr gly glu val val ala ala asp asp val	
301/101	331/111
ggt gaa gcc caa ccg gcg gta caa ccg cca cgc ccg att gtc ctc acc gtt ggt ctc cgg	
gly glu ala gln pro ala val gln pro pro arg pro ile val leu thr val gly leu arg	
361/121	391/131
tgt gga gag cag gac gtt gtc ctc gtc gcg acc ggc tag cag tgc gcg ggc caa cgc ctc	
cys gly glu gln asp val val leu val ala thr gly AMB gln ser ala gly gln arg leu	
421/141	451/151
ccc gag gcc acg gcc ttg agc gcg ggg aag gat gtg caa ttc agt caa ctc gaa gta gct	
pro glu ala thr ala leu ser ala gly lys asp val gln phe ser gln leu glu val ala	
481/161	511/171
ggt cat cag tgc gcc gat cgc tag gcg cgg aaa gcc gct gcg ttg caa gcc cag tac cac	
gly his gln ser gly asp arg AMB ala arg lys ala ala ala leu gln ala gln tyr his	
541/181	571/191
ctg ctg ttg cca cca ctg gcc ggg cgc ccc ggg ata gcc gta cgc cac tcc gag cat tgg	
leu leu leu pro pro leu ala gly arg pro gly ile ala val arg his ser glu his trp	
601/201	631/211
cgc gtt gct cag ttc gcc ggc cga cgg cag cgc cgt ggt gtc gcc ggc ctc gcc ctg ttc	
arg val ala gln phe gly gly arg arg gln arg arg gly val gly gly leu gly leu phe	
661/221	691/231
ggc tgc cgt tac ctc gac gcc cgc gac cgc ctg cca gcc gcg ccg ccg gat gtg ctc cag	
gly cys arg tyr leu asp gly arg asp arg leu pro ala ala pro pro asp val leu gln	
721/241	751/251
cca cat tgg ggc gcg caa agt ctc ggt gcc cct ggg gta gcg cat cgc gtc gac ata cac	
pro his trp gly ala gln ser leu gly ala pro gly val ala his arg val asp ile his	
781/261	811/271
cgt cag gcc atc acc gag gcg gcg ctc cat atc gct ggg cgg cag atc gat gag gaa tat	
arg gln gly ile thr glu ala ala leu his ile ala gly arg gln ile asp glu glu tyr	
841/281	871/291
cgc caa cgc gcg gtg tcc tcc tca tgt gat gaa ccg atg cgt gct tgc gca cca gta tgc	
arg gln arg ala val ser ser ser cys asp glu pro met arg ala cys ala pro val ser	
901/301	931/311
gac aag ccg atg agg ccg ccc gcg ctg gac ggg gct tgt agc gta tgg ccg ttt ccg ctc	
asp lys pro met arg pro pro ala leu asp gly ala cys ser val trp pro phe pro leu	

SEQ ID N° 452C

FIGURE 452C

FEUILLE DE REMPLACEMENT (REGLE 26)

152/185

961/321
 agc tcg tcg ctg cgg cgc cgc cgg gat aga atc gcc cgc gaa cca gtg gta cgg cgc aga
 ser ser ser leu arg arg arg arg asp arg ile ala arg glu pro val val arg arg arg
 1021/341
 ttg acc tcg tat cat ctg agt tag ttg ccc cgc caa tgg gca tcc gcg tgt tat cgg tat
 leu thr ser tyr his leu ser AMB leu pro ala gln trp ala ser ala cys tyr arg tyr
 1081/361
 tac gtg aca gtc tgt cgg caa gga ggg acg cat gcc act ctc cga tca tga gca gcg gat
 tyr val thr val cys arg gln gly gly thr his ala thr leu arg ser OPA ala ala asp
 1141/381
 gct tga cca gat cga gag cgc tct cta cgc cga aga tcc caa gtt cgc atc gag tgt ccg
 ala OPA pro asp arg glu arg ser leu arg arg arg ser gln val arg ile glu cys pro
 1201/401
 tgg cgg ggg ctt ccg cgc acc gac cgc gcg gcg gcg cct gca ggg cgc ggc gtt gtt cat
 trp arg gly leu pro arg thr asp arg ala ala ala pro ala gly arg gly val val his
 1261/421
 cat cgg tct ggg gat gtt ggt ttc cgg cgt ggc gtt caa aga gac cat gat cgg aag ttt
 his arg ser gly asp val gly phe arg arg gly val gln arg asp his asp arg lys phe
 1321/441
 ccc gat act cag cgt ttt cgg ttt tgt cgt gat gtt cgg tgg tgt ggt gta tgc cat cac
 pro asp thr gln arg phe arg phe cys arg asp val arg trp cys gly val cys his his
 1381/461
 cgg tcc tcg gtt gtc cgg cag gat gga tcg tgg cgg atc ggc tgc tgg ggc ttc gcg cca
 arg ser ser val val arg gln asp gly ser trp arg ile gly cys trp gly phe ala pro
 1441/481
 gcg tcg tac caa ggg ggc cgg ggg ctc att cac cag ccg tat gga aga tc
 ala ser tyr gln gly gly arg gly leu ile his gln pro tyr gly arg

SEQ ID N° 45ZC (suite 1)

FIGURE 45ZC (suite 1)

ORF de seq 45ZA directement en fusion avec phoA
 cag tct gtc ggc aag gag gga cgc atg cca ctc tcc gat cat gag cag cgg
 gln ser val gly lys glu gly arg met pro leu ser asp his glu gln arg
 1141/381
 atg ctt gac cag atc gag agc gct ctc tac gcc gaa gat ccc aag ttc gca tcg agt gtc
 met leu asp gln ile glu ser ala leu tyr ala glu asp pro lys phe ala ser ser val
 1201/401
 cgt ggc ggg ggc ttc cgc gca ccg acc gcg cgg cgg cgc ctg cag ggc gcg gcg ttg ttc
 arg gly gly phe arg ala pro thr ala arg arg arg leu gln gly ala ala leu phe
 1261/421
 atc atc ggt ctg ggg atg ttg gtt tcc ggc gtg gcg ttc aaa gag acc atg atc gga agt
 ile ile gly leu gly met leu val ser gly val ala phe lys glu thr met ile gly ser
 1321/441
 ttc ccg ata ctc agc gtt ttc ggt ttt gtc gtg atg ttc ggt ggt gtg gtg tat gcc atc
 phe pro ile leu ser val phe gly phe val val met phe gly gly val val tyr ala ile
 1381/461
 acc ggt cct cgg ttg tcc ggc agg atg gat cgt ggc gga tcg gct gct ggg gct tcg cgc
 thr gly pro arg leu ser gly arg met asp arg gly gly ser ala ala gly ala ser arg
 1441/481
 cag cgt cgt acc aag ggg gcc ggg ggc tca ttc acc agc cgt atg gaa gat c
 gln arg arg thr lys gly ala gly gly ser phe thr ser arg met glu asp

SEQ ID N° 45A

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 45A

153/185

Séquence Rv2169c prédite par Cole et al., 1998 (Nature 393:537-544) et contenant Seq45A

```

1/1                               31/11
atg cca ctc tcc gat cat gag cag cgg atg ctt gac cag atc gag agc gct ctc tac gcc
Met pro leu ser asp his glu gln arg met leu asp gln ile glu ser ala leu tyr ala
61/21                               91/31
gaa gat ccc aag ttc gca tcg agt gtc cgt ggc ggg ggc ttc cgc gca ccg acc gcg cgg
glu asp pro lys phe ala ser ser val arg gly gly gly phe arg ala pro thr ala arg
121/41                               151/51
cgg cgc ctg cag ggc gcg gcg ttg ttc atc atc ggt ctg ggg atg ttg gtt tcc ggc gtg
arg arg leu gln gly ala ala leu phe ile ile gly leu gly met leu val ser gly val
181/61                               211/71
gcg ttc aaa gag acc atg atc gga agt ttc ccg ata ctc agc gtt ttc ggt ttt gtc gtg
ala phe lys glu thr met ile gly ser phe pro ile leu ser val phe gly phe val val
241/81                               271/91
atg ttc ggt ggt gtg gtg tat gcc atc acc ggt cct cgg ttg tcc ggc agg atg gat cgt
met phe gly gly val val tyr ala ile thr gly pro arg leu ser gly arg met asp arg
301/101                               331/111
ggc gga tcg gct gct ggg gct tcg cgc cag cgt cgt acc aag ggg gcc ggg ggc tca ttc
gly gly ser ala ala gly ala ser arg gln arg arg thr lys gly ala gly gly ser phe
361/121                               391/131
acc agc cgt atg gaa gat cgg ttc cgg cgc cgc ttc gac gag taa
thr ser arg met glu asp arg phe arg arg phe asp glu OCH

```

SEQ ID N° 45D

FIGURE 45D

ORF d'après Cole et al., 1998 (Nature 393:537-544) et contenant Rv2169c

```

1/1                               31/11
tga cag tct gtc ggc aag gag gga cgc atg cca ctc tcc gat cat gag cag cgg atg ctt
OPA gln ser val gly lys glu gly arg met pro leu ser asp his glu gln arg met leu
61/21                               91/31
gac cag atc gag agc gct ctc tac gcc gaa gat ccc aag ttc gca tcg agt gtc cgt ggc
asp gln ile glu ser ala leu tyr ala glu asp pro lys phe ala ser ser val arg gly
121/41                               151/51
ggg ggc ttc cgc gca ccg acc gcg cgg cgg cgc ctg cag ggc gcg gcg ttg ttc atc atc
gly gly phe arg ala pro thr ala arg arg arg leu gln gly ala ala leu phe ile ile
181/61                               211/71
ggt ctg ggg atg ttg gtt tcc ggc gtg gcg ttc aaa gag acc atg atc gga agt ttc ccg
gly leu gly met leu val ser gly val ala phe lys glu thr met ile gly ser phe pro
241/81                               271/91
ata ctc agc gtt ttc ggt ttt gtc gtg atg ttc ggt ggt gtg gtg tat gcc atc acc ggt
ile leu ser val phe gly phe val val met phe gly gly val val tyr ala ile thr gly
301/101                               331/111
cct cgg ttg tcc ggc agg atg gat cgt ggc gga tcg gct gct ggg gct tcg cgc cag cgt
pro arg leu ser gly arg met asp arg gly gly ser ala ala gly ala ser arg gln arg
361/121                               391/131
cgt acc aag ggg gcc ggg ggc tca ttc acc agc cgt atg gaa gat cgg ttc cgg cgc cgc
arg thr lys gly ala gly gly ser phe thr ser arg met glu asp arg phe arg arg arg
421/141
ttc gac gag taa
phe asp glu OCH

```

SEQ ID N° 45F

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 45F

154/185

1/1 31/11
 cag ccg cgc cgc atc gac cag ggc ctc acg ccc ggt cac ttc tcc gcg ttc ctc aac aat
 gln pro arg arg ile asp gln gly leu thr pro gly his phe ser ala phe leu asn asn
 61/21 91/31
 tcc ggt gaa cat cgc acc agg tta ggc agc aat ccc gcg gac ccg cac ccc act cgc cga
 ser gly glu his arg thr arg leu gly ser asn pro ala asp pro his pro thr arg arg
 121/41 151/51
 ccg gcc aac tca cag aca ccc tct acg atg cag ggt atg cgg acc ccc aga cgc cac tgc
 pro ala asn ser gln thr pro ser thr met gln gly met arg thr pro arg arg his cys
 181/61 211/71
 cgt cgc atc gcc gtc ctc gcc gcc gtt agc atc gcc gcc act gtc gtt gcc ggc tgc tcg
 arg arg ile ala val leu ala ala val ser ile ala ala thr val val ala gly cys ser
 241/81 271/91
 tcg gcc tcg aag cca agc ggc gga cca ctt ccg gac gcg aag ccg ctg gtc gag gag gcc
 ser gly ser lys pro ser gly gly pro leu pro asp ala lys pro leu val glu glu ala
 301/101 331/111
 acc gcg cag acc aag gct ctc aag agc gcg cac atg gtg ctg acg gtc aac ggc aag atc
 thr ala gln thr lys ala leu lys ser ala his met val leu thr val asn gly lys ile

SEQ ID N° 46A

FIGURE 46A

1/1 31/11
 agc cgc gcc gca tcg acc agg gcc tca cgc ccg gtc act tct ccg cgt tcc tca aca att
 ser arg ala ala ser thr arg ala ser arg pro val thr ser pro arg ser ser thr ile
 61/21 91/31
 ccg gtg aac atc gca cca ggt tag gca gca atc ccg cgg acc cgc acc cca ctc gcc gac
 pro val asn ile ala pro gly AMB ala ala ile pro arg thr arg thr pro leu ala asp
 121/41 151/51
 cgg cca act cac aga cac cct cta cga tgc agg gta tgc gga ccc cca gac gcc act gcc
 arg pro thr his arg his pro leu arg cys arg val cys gly pro pro asp ala thr ala
 181/61 211/71
 gtc gca tcg ccg tcc tcg ccg ccg tta gca tcg ccg cca ctg tcg ttg ccg gct gct cgt
 val ala ser pro ser ser pro pro leu ala ser pro pro leu ser leu pro ala ala arg
 241/81 271/91
 cgg gct cga agc caa gcg gcg gac cac ttc ccg acg cga agc cgc tgg tcg agg agg cca
 arg ala arg ser gln ala ala asp his phe arg thr arg ser arg trp ser arg arg pro
 301/101 331/111
 ccg cgc aga cca agg ctc tca aga gcg cgc aca tgg tgc tga cgg tca acg gca aga tc
 pro arg arg pro arg leu ser arg ala arg thr trp cys OPA arg ser thr ala arg

SEQ ID N° 46B

FIGURE 46B

155/185

1/1 31/11
 gcc gcg ccg cat cga cca ggg cct cac gcc cgg tca ctt ctc cgc gtt cct caa caa ttc
 ala ala pro his arg pro gly pro his ala arg ser leu leu arg val pro gln gln phe
 61/21 91/31
 cgg tga aca tcg cac cag gtt agg cag caa tcc cgc gga ccc gca ccc cac tcg ccg acc
 arg opa thr ser his gln val arg gln gln ser arg gly pro ala pro his ser pro thr
 121/41 151/51
 ggc caa ctc aca gac acc ctc tac gat gca ggg tat gcg gac ccc cag acg cca ctg ccg
 gly gln leu thr asp thr leu tyr asp ala gly tyr ala asp pro gln thr pro leu pro
 181/61 211/71
 tcg cat cgc cgt cct cgc cgc cgt tag cat cgc cgc cac tgt cgt tgc cgg ctg ctc gtc
 ser his arg arg pro arg arg arg AMB his arg arg his cys arg cys arg leu leu val
 241/81 271/91
 ggg ctc gaa gcc aag cgg cgg acc act tcc gga cgc gaa gcc gct ggt cga gga ggc cac
 gly leu glu ala lys arg arg thr thr ser gly arg glu ala ala gly arg gly gly his
 301/101 331/111
 cgc gca gac caa ggc tct caa gag cgc gca cat ggt gct gac ggt caa cgg caa gat c
 arg ala asp gln gly ser gln glu arg ala his gly ala asp gly gln arg gln asp

SEQ ID N° 46C

FIGURE 46C

156/185

Séquence codante Rv1411c prédite par Cole et al., 1998 (Nature 393: 537-544) et contenant seq46A:

1/1	31/11
atg cgg acc ccc aga cgc cac tgc cgt cgc	atc gcc gtc ctc gcc gcc gtt agc atc gcc
Met arg thr pro arg arg his cys arg arg	ile ala val leu ala ala val ser ile ala
61/21	91/31
gcc act gtc gtt gcc ggc tgc tgc tgc ggc	tcg aag cca agc ggc gga cca ctt ccg gac
ala thr val val ala gly cys ser ser gly	ser lys pro ser gly gly pro leu pro asp
121/41	151/51
gcg aag ccg ctg gtc gag gag gcc acc gcg	cag acc aag gct ctc aag agc gcg cac atg
ala lys pro leu val glu glu ala thr ala	gln thr lys ala leu lys ser ala his met
181/61	211/71
gtg ctg acg gtc aac ggc aag atc ccg gga	ctg tct ctg aag acg ctg agc ggc gat ctc
val leu thr val asn gly lys ile pro gly	leu ser leu lys thr leu ser gly asp leu
241/81	271/91
acc acc aac ccc acc gcc gcg acg gga aac	gtc aag ctc acg ctg ggt ggg tct gat atc
thr thr asn pro thr ala ala thr gly asn	val lys leu thr leu gly gly ser asp ile
301/101	331/111
gat gcc gac ttc gtg gtg ttc gac ggg atc	ctg tac gcc acc ctg acg ccc aac cag tgg
asp ala asp phe val val phe asp gly ile	leu tyr ala thr leu thr pro asn gln trp
361/121	391/131
agc gat ttc ggt ccc gcc gcc gac atc tac	gac ccc gcc cag gtg ctg aat ccg gat acc
ser asp phe gly pro ala ala asp ile tyr	asp pro ala gln val leu asn pro asp thr
421/141	451/151
ggc ctg gcc aac gtg ctg gcg aat ttc gcc	gac gca aaa gcc gaa ggg ccg gat acc atc
gly leu ala asn val leu ala asn phe ala	asp ala lys ala glu gly arg asp thr ile
481/161	511/171
aac ggc cag aac acc atc cgc atc agc ggg	aag gta tgc gca cag gcg gtg aac cag ata
asn gly gln asn thr ile arg ile ser gly	lys val ser ala gln ala val asn gln ile
541/181	571/191
gcg ccg ccg ttc aac gcg acg cag ccg gtg	ccg gcg acc gtc tgg att cag gag acc gcc
ala pro pro phe asn ala thr gln pro val	pro ala thr val trp ile gln glu thr gly
601/201	631/211
gat cat caa ctg gca cag gcc cag ttg gac	cgc gcc tgc ggc aat tcc gtc cag atg acc
asp his gln leu ala gln ala gln leu asp	arg gly ser gly asn ser val gln met thr
661/221	691/231
ttg tgc aaa tgg ggc gag aag gtc cag gtc	acg aag ccc ccg gtg agc tga
leu ser lys trp gly glu lys val gln val	thr lys pro pro val ser OPA

SEQ ID N° 46D

FIGURE 46D

157/185

ORF d'après par Cole et al., 1998 (Nature 393: 537-544):
et contenant la séquence codante Rv1411c:

```

1/1                                31/11
tag ctc acc cag gtt gga ccg gtt cag tgt ctc ggc cat cac gtc ggc ggt gaa ttg gcc
AMB leu thr gln val gly pro val gln cys leu gly his his val gly gly glu leu ala
61/21                                91/31
gtc ggg caa tac atc gac gac cgt cag aca cac gcc gtt gac agc gat cga gtc gcc gtg
val gly gln tyr ile asp asp arg gln thr his ala val asp ser asp arg val ala val
121/41                                151/51
gcc ggc gtc ggc ggt aac cat cgg acc gcg gat ggt cag ccg cgc cgc atc gac cag gcc
ala gly val gly gly asn his arg thr ala asp gly gln pro arg arg ile asp gln gly
181/61                                211/71
ctc acg ccc ggt cac ttc tcc gcg ttc ctc aac aat tcc ggt gaa cat cgc acc agg tta
leu thr pro gly his phe ser ala phe leu asn asn ser gly glu his arg thr arg leu
241/81                                271/91
ggc agc aat ccc gcg gac ccg cac ccc act cgc cga ccg gcc aac tca cag aca ccc tct
gly ser asn pro ala asp pro his pro thr arg arg pro ala asn ser gln thr pro ser
301/101                               331/111
acg atg cag ggt atg ccg acc ccc aga cgc cac tgc cgt cgc atc gcc gtc ctc gcc gcc
thr met gln gly met arg thr pro arg arg his cys arg arg ile ala val leu ala ala
361/121                               391/131
gtt agc atc gcc gcc act gtc gtt gcc ggc tgc tgc tgc ggc tgc aag cca agc gcc gga
val ser ile ala ala thr val val ala gly cys ser ser gly ser lys pro ser gly gly
421/141                               451/151
cca ctt ccg gac gcg aag ccg ctg gtc gag gag gcc acc gcg cag acc aag gct ctc aag
pro leu pro asp ala lys pro leu val glu glu ala thr ala gln thr lys ala leu lys
481/161                               511/171
agc gcg cac atg gtg ctg acg gtc aac gcc aag atc ccg gga ctg tct ctg aag acg ctg
ser ala his met val leu thr val asn gly lys ile pro gly leu ser leu lys thr leu
541/181                               571/191
agc ggc gat ctc acc acc aac ccc acc gcc gcg acg gga aac gtc aag ctc acg ctg ggt
ser gly asp leu thr thr asn pro thr ala ala thr gly asn val lys leu thr leu gly
601/201                               631/211
ggg tct gat atc gat gcc gac ttc gtg gtg ttc gac ggg atc ctg tac gcc acc ctg acg
gly ser asp ile asp ala asp phe val val phe asp gly ile leu tyr ala thr leu thr
661/221                               691/231
ccc aac cag tgg agc gat ttc ggt ccc gcc gcc gac atc tac gac ccc gcc cag gtg ctg
pro asn gln trp ser asp phe gly pro ala ala asp ile tyr asp pro ala gln val leu
721/241                               751/251
aat ccg gat acc ggc ctg gcc aac gtg ctg gcg aat ttc gcc gac gca aaa gcc gaa ggg
asn pro asp thr gly leu ala asn val leu ala asn phe ala asp ala lys ala glu gly
781/261                               811/271
cgg gat acc atc aac ggc cag aac acc atc cgc atc agc ggg aag gta tgc gca cag gcg
arg asp thr ile asn gly gln asn thr ile arg ile ser gly lys val ser ala gln ala
841/281                               871/291
gtg aac cag ata gcg ccg ccg ttc aac gcg acg cag ccg gtg ccg gcg acc gtc tgg att
val asn gln ile ala pro pro phe asn ala thr gln pro val pro ala thr val trp ile
901/301                               931/311
cag gag acc ggc gat cat caa ctg gca cag gcc cag ttg gac cgc ggc tgc ggc aat tcc
gln glu thr gly asp his gln leu ala gln ala gln leu asp arg gly ser gly asn ser
961/321                               991/331
gtc cag atg acc ttg tgc aaa tgg ggc gag aag gtc cag gtc acg aag ccc ccg gtg agc
val gln met thr leu ser lys trp gly glu lys val gln val thr lys pro pro val ser
1021/341
tga
OPA

```

SEQ ID N° 46F

FEUILLE DE REMPLACEMENT (REGLE 26)

158/185

```

1/1                               31/11
gag ctg gtc aac ggc gcc ggc atc gac gac gcc gcc gtc gtg acc tgc cgg ccg gac agc
glu leu val asn gly ala gly ile asp asp ala ala val val thr cys arg pro asp ser
61/21                               91/31
ctg gcc gat gcc cag cag atg gtc gag gcg gca ctg ggc cga tat ggc cgt ttg gac gga
leu ala asp ala gln gln met val glu ala ala leu gly arg tyr gly arg leu asp gly
121/41                               151/51
gtg ttg gtg gcc tcg ggc agc aac cat gtg gcg ccc att acc gag atg gcc gtc gag gac
val leu val ala ser gly ser asn his val ala pro ile thr glu met ala val glu asp
181/61                               211/71
ttc gac gct gtg atg gac gcg aac gtg cgg ggt gcc tgg ctg gtg tgt cgg gcg gcc gga
phe asp ala val met asp ala asn val arg gly ala trp leu val cys arg ala ala gly
241/81                               271/91
cgg gtg ctg ctc gag cag ggt cag ggc ggc agc gtg gtg ctg gtg tcg tcc gtt cgc ggc
arg val leu leu glu gln gly gln gly gly ser val val leu val ser ser val arg gly
301/101                               331/111
ggg ttg ggc aat gcc gcc ggt tac agc gcg tac tgc ccg tcg aag gcg ggc acc gat c
gly leu gly asn ala ala gly tyr ser ala tyr cys pro ser lys ala gly thr asp

```

SEQ ID N° 47A

FIGURE 47A

```

1/1                               31/11
agc tgg tca acg gcg ccg gca tcg acg acg ccg ccg tcg tga cct gcc ggc cgg aca gcc
ser trp ser thr ala pro ala ser thr thr pro pro ser OPA pro ala gly arg thr ala
61/21                               91/31
tgg ccg atg ccc agc aga tgg tcg agg cgg cac tgg gcc gat atg gcc gtt tgg acg gag
trp pro met pro ser arg trp ser arg arg his trp ala asp met ala val trp thr glu
121/41                               151/51
tgt tgg tgg cct cgg gca gca acc atg tgg cgc cca tta ccg aga tgg ccg tcg agg act
cys trp trp pro arg ala ala thr met trp arg pro leu pro arg trp pro ser arg thr
181/61                               211/71
tcg acg ctg tga tgg acg cga acg tgc ggg gtg cct gcc tgg tgt gtc ggg ccg ccg gac
ser thr leu OPA trp thr arg thr cys gly val pro gly trp cys val gly arg pro asp
241/81                               271/91
ggg tgc tgc tcg agc agg gtc agg gcg gca gcg tgg tgc tgg tgt cgt ccg ttc gcg gcg
gly cys cys ser ser arg val arg ala ala ala trp cys trp cys arg pro phe ala ala
301/101                               331/111
ggt tgg gca atg ccg ccg gtt aca gcg cgt act gcc cgt cga agg ccg gca ccg atc
gly trp ala met pro pro val thr ala arg thr ala arg arg arg ala pro ile

```

SEQ ID N° 47B

FIGURE 47B

159/185

1/1	31/11
gct ggt caa cgg cgc cgg cat cga cga cgc cgc cgt cgt gac ctg ccg gcc gga cag cct	
ala gly gln arg arg arg his arg arg arg arg arg asp leu pro ala gly gln pro	
61/21	91/31
ggc cga tgc cca gca gat ggt cga ggc ggc act ggg ccg ata tgg ccg ttt gga cgg agt	
gly arg cys pro ala asp gly arg gly gly thr gly pro ile trp pro phe gly arg ser	
121/41	151/51
gtt ggt ggc ctc ggg cag caa cca tgt ggc gcc cat tac cga gat ggc cgt cga gga ctt	
val gly gly leu gly gln gln pro cys gly ala his tyr arg asp gly arg arg gly leu	
181/61	211/71
cga cgc tgt gat gga cgc gaa cgt gcg ggg tgc ctg gct ggt gtg tcg ggc ggc cgg acg	
arg arg cys asp gly arg glu arg ala gly cys leu ala gly val ser gly gly arg thr	
241/81	271/91
ggt gct gct cga gca ggg tca ggg cgg cag cgt ggt gct ggt gtc gtc cgt tcg cgg cgg	
gly ala ala arg ala gly ser gly arg gln arg gly ala gly val val arg ser arg arg	
301/101	331/111
gtt ggg caa tgc cgc cgg tta cag cgc gta ctg ccc gtc gaa ggc ggg cac cga tc	
val gly gln cys arg arg leu gln arg val leu pro val glu gly gly his arg	

SEQ ID N° 47C

FIGURE 47C

160/185

Séquence codante Rv1714 prédite par Cole et al., 1998 (Nature 393: 537-544) et contenant seq 47A:

```

1/1                               31/11
gtg gag gaa atg gcg ctg gct cag cag gtg ccg aac ctg ggt ctg gcg cgc ttc agc gtg
val glu glu met ala leu ala gln gln val pro asn leu gly leu ala arg phe ser val
61/21                               91/31
cag gac aag tcg atc ctg atc acc ggc gcg acc ggt tcg ttg ggc cga gtt gcc gcc cgg
gln asp lys ser ile leu ile thr gly ala thr gly ser leu gly arg val ala ala arg
121/41                               151/51
gcg ctg gcc gac gcg gga gcg cgg ctg aca ctg gcc ggc ggc aac tcg gcc ggt ctg gcc
ala leu ala asp ala gly ala arg leu thr leu ala gly gly asn ser ala gly leu ala
181/61                               211/71
gag ctg gtc aac ggc gcc ggc atc gac gac gcc gcc gtc gtg acc tgc cgg ccg gac agc
glu leu val asn gly ala gly ile asp asp ala ala val val thr cys arg pro asp ser
241/81                               271/91
ctg gcc gat gcc cag cag atg gtc gag gcg gca ctg ggc cga tat ggc cgt ttg gac gga
leu ala asp ala gln gln met val glu ala ala leu gly arg tyr gly arg leu asp gly
301/101                               331/111
gtg ttg gtg gcc tcg ggc agc aac cat gtg gcg ccc att acc gag atg gcc gtc gag gac
val leu val ala ser gly ser asn his val ala pro ile thr glu met ala val glu asp
361/121                               391/131
ttc gac gct gtg atg gac gcg aac gtg cgg ggt gcc tgg ctg gtg tgt cgg gcg gcc gga
phe asp ala val met asp ala asn val arg gly ala trp leu val cys arg ala ala gly
421/141                               451/151
cgg gtg ctg ctc gag cag ggt cag ggc ggc agc gtg gtg ctg gtg tcg tcc gtt cgc ggc
arg val leu leu glu gln gly gln gly gly ser val val leu val ser ser val arg gly
481/161                               511/171
ggg ttg ggc aat gcc gcc ggt tac agc gcg tac tgc ccg tcg aag gcg ggc acc gat ctg
gly leu gly asn ala ala gly tyr ser ala tyr cys pro ser lys ala gly thr asp leu
541/181                               571/191
ttg gcc aag aca ttg gcg gcc gaa tgg ggc ggt cac ggc att cgg gtg aac gcg ctg gcg
leu ala lys thr leu ala ala glu trp gly gly his gly ile arg val asn ala leu ala
601/201                               631/211
ccg acg gtg ttt cgg tcc gcg gtg acc gag tgg atg ttc acc gac gat ccg aag ggc cgg
pro thr val phe arg ser ala val thr glu trp met phe thr asp asp pro lys gly arg
661/221                               691/231
gcc acc cgg gag gcg atg ctc gcc cgg atc ccg ttg cgc cgc ttc gcc gaa ccg gaa gac
ala thr arg glu ala met leu ala arg ile pro leu arg arg phe ala glu pro glu asp
721/241                               751/251
ttc gtc ggc gcc ctg atc tat ctg ctc agc gac gcc tcg agc ttc tac acc ggc cag gtg
phe val gly ala leu ile tyr leu leu ser asp ala ser ser phe tyr thr gly gln val
781/261                               811/271
atg tat ctg gac ggc ggg tac acc gca tgc tga
met tyr leu asp gly gly tyr thr ala cys OPA

```

SEQ ID N° 47D

FIGURE 47D

161/185

ORF d'après Cole et al., 1998 (Nature 393: 537-544) et contenant la séquence codante Rv1714:

```

24/1                               54/11
tag gtg gag gaa atg gcg ctg gct cag cag gtg ccg aac ctg ggt ctg gcg cgc ttc agc
AMB val glu glu met ala leu ala gln gln val pro asn leu gly leu ala arg phe ser
84/21                               114/31
gtg cag gac aag tcg atc ctg atc acc ggc gcg acc ggt tcg ttg ggc cga gtt gcc gcc
val gln asp lys ser ile leu ile thr gly ala thr gly ser leu gly arg val ala ala
144/41                               174/51
cgg gcg ctg gcc gac gcg gga gcg cgg ctg aca ctg gcc ggc ggc aac tcg gcc ggt ctg
arg ala leu ala asp ala gly ala arg leu thr leu ala gly gly asn ser ala gly leu
204/61                               234/71
gcc gag ctg gtc aac ggc gcc ggc atc gac gac gcc gcc gtc gtg acc tgc cgg ccg gac
ala glu leu val asn gly ala gly ile asp asp ala ala val val thr cys arg pro asp
264/81                               294/91
agc ctg gcc gat gcc cag cag atg gtc gag gcg gca ctg ggc cga tat ggc cgt ttg gac
ser leu ala asp ala gln gln met val glu ala ala leu gly arg tyr gly arg leu asp
324/101                             354/111
gga gtg ttg gtg gcc tcg ggc agc aac cat gtg gcg ccc att acc gag atg gcc gtc gag
gly val leu val ala ser gly ser asn his val ala pro ile thr glu met ala val glu
384/121                             414/131
gac ttc gac gct gtg atg gac gcg aac gtg cgg ggt gcc tgg ctg gtg tgt cgg gcg gcc
asp phe asp ala val met asp ala asn val arg gly ala trp leu val cys arg ala ala
444/141                             474/151
gga cgg gtg ctg ctc gag cag ggt cag ggc ggc agc gtg gtg ctg gtg tcg tcc gtt cgc
gly arg val leu leu glu gln gly gln gly gly ser val val leu val ser ser val arg
504/161                             534/171
ggc ggg ttg ggc aat gcc gcc ggt tac agc gcg tac tgc ccg tcg aag gcg ggc acc gat
gly gly leu gly asn ala ala gly tyr ser ala tyr cys pro ser lys ala gly thr asp
564/181                             594/191
ctg ttg gcc aag aca ttg gcg gcc gaa tgg ggc ggt cac ggc att cgg gtg aac gcg ctg
leu leu ala lys thr leu ala ala glu trp gly gly his gly ile arg val asn ala leu
624/201                             654/211
gcg ccg acg gtg ttt cgg tcc gcg gtg acc gag tgg atg ttc acc gac gat ccg aag ggc
ala pro thr val phe arg ser ala val thr glu trp met phe thr asp asp pro lys gly
684/221                             714/231
cgg gcc acc cgg gag gcg atg ctc gcc cgg atc ccg ttg cgc cgc ttc gcc gaa ccg gaa
arg ala thr arg glu ala met leu ala arg ile pro leu arg arg phe ala glu pro glu
744/241                             774/251
gac ttc gtc ggc gcc ctg atc tat ctg ctc agc gac gcc tcg agc ttc tac acc ggc cag
asp phe val gly ala leu ile tyr leu leu ser asp ala ser ser phe tyr thr gly gln
804/261                             834/271
gtg atg tat ctg gac ggc ggg tac acc gca tgc tga
val met tyr leu asp gly gly tyr thr ala cys OPA

```

SEQ ID N° 47F

FIGURE 47F

162/185

```
1/1                               31/11
agg ctc atg agc aag acg gtt ctc atc ctt ggc gcg ggt gtc ggc ggc ctg acc acc gcc
arg leu met ser lys thr val leu ile leu gly ala gly val gly gly leu thr thr ala
61/21                             91/31
gac acc ctc cgt caa ctg cta cca cct gag gat c
asp thr leu arg gln leu leu pro pro glu asp
```

SEQ ID N° 48A

FIGURE 48A

```
1/1                               31/11
ggc tca tga gca aga cgg ttc tca tcc ttg gcg cgg gtg tcg gcg gcc tga cca ccg ccg
gly ser OPA ala arg arg phe ser ser leu ala arg val ser ala ala OPA pro pro pro
61/21                             91/31
aca ccc tcc gtc aac tgc tac cac ctg agg atc
thr pro ser val asn cys tyr his leu arg ile
```

SEQ ID N° 48B

FIGURE 48B

```
1/1                               31/11
gct cat gag caa gac ggt tct cat cct tgg cgc ggg tgt cgg cgg cct gac cac cgc cga
ala his glu gln asp gly ser his pro trp arg gly cys arg arg pro asp his arg arg
61/21
cac cct ccg tca act gct acc acc tga gga tc
his pro pro ser thr ala thr thr OPA gly
```

SEQ ID N° 48C

FIGURE 48C

163/185

Séquence codante Rv0331 prédite par Cole et al., 1998 (Nature 393: 537-544) et contenant seq48A:

```

1/1                               31/11
atg agc aag acg gtt ctc atc ctt ggc gcg ggt gtc ggc ggc ctg acc acc gcc gac acc
Met ser lys thr val leu ile leu gly ala gly val gly gly leu thr thr ala asp thr
61/21                               91/31
ctc cgt caa ctg cta cca cct gag gat cga atc ata ttg gtg gac agg agc ttt gac ggg
leu arg gln leu leu pro pro glu asp arg ile ile leu val asp arg ser phe asp gly
121/41                               151/51
acg ctg ggc ttg tct ttg cta tgg gtg ttg cgg ggc tgg cgg cgg cct gac gac gtc cgc
thr leu gly leu ser leu leu trp val leu arg gly trp arg arg pro asp asp val arg
181/61                               211/71
gtc cgc ccc acc gcg gcg tct ctg ccc ggt gtg gaa atg gtt act gca acc gtc gcc cac
val arg pro thr ala ala ser leu pro gly val glu met val thr ala thr val ala his
241/81                               271/91
att gac atc gcg gcc cag gta gtg cac acc gac aac agc gtc atc ggc tat gac gcg ttg
ile asp ile ala ala gln val val his thr asp asn ser val ile gly tyr asp ala leu
301/101                               331/111
gtg atc gca tta ggt gcg gcg ctg aac acc gac gcc gtt ccc gga ctg tct gac gcg ctc
val ile ala leu gly ala ala leu asn thr asp ala val pro gly leu ser asp ala leu
361/121                               391/131
gac gcc gac gtc gcg ggc cag ttc tac acc ctg gac ggc gcg gct gag ctg cgt gcg aag
asp ala asp val ala gly gln phe tyr thr leu asp gly ala ala glu leu arg ala lys
421/141                               451/151
gtc gag gcg ctc gag cat ggc cgg atc gct gtg gct atc gcc ggg gtg ccg ttc aaa tgc
val glu ala leu glu his gly arg ile ala val ala ile ala gly val pro phe lys cys
481/161                               511/171
cca gcc gca ccg ttc gaa gcg gcg ttt ctg atc gcc gcc caa ctc ggt gac cgc tac gcc
pro ala ala pro phe glu ala ala phe leu ile ala ala gln leu gly asp arg tyr ala
541/181                               571/191
acc gga acc gta cag atc gac acg ttc acg cct gac ccg ctg ccg atg ccc gtt gca ggt
thr gly thr val gln ile asp thr phe thr pro asp pro leu pro met pro val ala gly
601/201                               631/211
ccc gag gtc ggc gag gct ttg gtc tct atg ctc aag gat cac ggt gtc gcc ttc cat cct
pro glu val gly glu ala leu val ser met leu lys asp his gly val gly phe his pro
661/221                               691/231
cgc aag gcc cta gct cgc gtc gat gag gcc gca agg acg atg cac ttc ggt gac gcc acg
arg lys ala leu ala arg val asp glu ala ala arg thr met his phe gly asp gly thr
721/241                               751/251
tcc gaa ccg ttc gat ctg ctt gcc gtg gtc ccc ccg cac gtg ccc tcc gcc gcg gcg ccg
ser glu pro phe asp leu leu ala val val pro pro his val pro ser ala ala ala arg
781/261                               811/271
tca gcg ggt ctc agc gaa tcc ggg tgg ata ccc gtg gac ccg cgc acc ctg tcc act agc
ser ala gly leu ser glu ser gly trp ile pro val asp pro arg thr leu ser thr ser
841/281                               871/291
gcc gac aac gtg tgg gcc atc ggc gat gcg acc gtg ctg acg ctg ccg aat gcc aaa ccg
ala asp asn val trp ala ile gly asp ala thr val leu thr leu pro asn gly lys pro
901/301                               931/311
ctg ccc aag gct gcc gtg ttc gcc gaa gcc cag gcc gca gtt gtc gcc cac gcc gtc gcc
leu pro lys ala ala val phe ala glu ala gln ala ala val val ala his gly val ala
961/321                               991/331
cgc cat ctc ggt tac gac gta gct gag cgc cac ttc acc gcc acg gcc gcc tgc tac gtc
arg his leu gly tyr asp val ala glu arg his phe thr gly thr gly ala cys tyr val
1021/341                               1051/351
gag acc ggt gat cac cag gca gcc aag gcc gac gcc gat ttc ttc gct ccg tct gcg ccc
glu thr gly asp his gln ala ala lys gly asp gly asp phe phe ala pro ser ala pro
1081/361                               1111/371
tct gtg acg ctg tac ccg ccg tct gcg gag ttt cac gag gag aag gtc gca caa gaa ctg
ser val thr leu tyr pro pro ser arg glu phe his glu glu lys val ala gln glu leu
1141/381
gcc tgg ctg acc cgc tgg aag acg tga
ala trp leu thr arg trp lys thr OPA

```

SEQ ID N° 48D

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 48D

164/185

ORF d'après Cole et al., 1998 (Nature 393: 537-544) et contenant la séquence codante Rv0331:

```

1/1                                31/11
tga aca ccc gcg ccg acg cgg cga caa tcg cgg aaa acc ggt ccg cgg gaa tgc tgc ggg
OPA thr pro ala pro thr arg arg gln ser arg lys thr gly pro arg glu cys cys gly
61/21                                91/31
cca tgg gcc gat aat agt ttg act gac tcg gtc agt cac ccc aag acc ttg cgc aag act
pro trp ala asp asn ser leu thr asp ser val ser his pro lys thr leu arg lys thr
121/41                                151/51
gcg gcg gaa tct aat att cca aag ata tat gga act cga tgc gaa gga atc agg ctc atg
ala ala glu ser asn ile pro lys ile tyr gly thr arg cys glu gly ile arg leu met
181/61                                211/71
agc aag acg gtt ctc atc ctt ggc gcg ggt gtc ggc ggc ctg acc acc gcc gac acc ctc
ser lys thr val leu ile leu gly ala gly val gly gly leu thr thr ala asp thr leu
241/81                                271/91
cgt caa ctg cta cca cct gag gat cga atc ata ttg gtg gac agg agc ttt gac ggg acg
arg gln leu leu pro pro glu asp arg ile ile leu val asp arg ser phe asp gly thr
301/101                                331/111
ctg ggc ttg tcg ttg cta tgg gtg ttg cgg ggc tgg cgg cgg cct gac gac gtc cgc gtc
leu gly leu ser leu leu trp val leu arg gly trp arg arg pro asp asp val arg val
361/121                                391/131
cgc ccc acc gcg gcg tcg ctg ccc ggt gtg gaa atg gtt act gca acc gtc gcc cac att
arg pro thr ala ala ser leu pro gly val glu met val thr ala thr val ala his ile
421/141                                451/151
gac atc gcg gcc cag gta gtg cac acc gac aac agc gtc atc ggc tat gac gcg ttg gtg
asp ile ala ala gln val val his thr asp asn ser val ile gly tyr asp ala leu val
481/161                                511/171
atc gca tta ggt gcg gcg ctg aac acc gac gcc gtt ccc gga ctg tcg gac gcg ctc gac
ile ala leu gly ala ala leu asn thr asp ala val pro gly leu ser asp ala leu asp
541/181                                571/191
gcc gac gtc gcg ggc cag ttc tac acc ctg gac ggc gcg gct gag ctg cgt gcg aag gtc
ala asp val ala gly gln phe tyr thr leu asp gly ala ala glu leu arg ala lys val
601/201                                631/211
gag gcg ctc gag cat ggc cgg atc gct gtg gct atc gcc ggg gtg ccg ttc aaa tgc cca
glu ala leu glu his gly arg ile ala val ala ile ala gly val pro phe lys cys pro
661/221                                691/231
gcc gca ccg ttc gaa gcg gcg ttt ctg atc gcc gcc caa ctc ggt gac cgc tac gcc acc
ala ala pro phe glu ala ala phe leu ile ala ala gln leu gly asp arg tyr ala thr
721/241                                751/251
gga acc gta cag atc gac acg ttc acg cct gac ccg ctg ccg atg ccc gtt gca ggt ccc
gly thr val gln ile asp thr phe thr pro asp pro leu pro met pro val ala gly pro
781/261                                811/271
gag gtc ggc gag gct ttg gtc tcg atg ctc aag gat cac ggt gtc ggc ttc cat cct cgc
glu val gly glu ala leu val ser met leu lys asp his gly val gly phe his pro arg
841/281                                871/291
aag gcc cta gct cgc gtc gat gag gcc gca agg acg atg cac ttc ggt gac ggc acg tcc
lys ala leu ala arg val asp glu ala ala arg thr met his phe gly asp gly thr ser

```

SEQ ID N° 48F

FIGURE 48F

FEUILLE DE REMPLACEMENT (REGLE 26)

165/185

901/301	931/311
gaa ccg ttc gat ctg ctt gcc gtg gtc ccc	ccg cac gtg ccc tcc gcc gcg gcg cgg tca
glu pro phe asp leu leu ala val val pro	pro his val pro ser ala ala ala arg ser
961/321	991/331
gcg ggt ctc agc gaa tcc ggg tgg ata ccc	gtg gac ccg cgc acc ctg tcc act agc gcc
ala gly leu ser glu ser gly trp ile pro	val asp pro arg thr leu ser thr ser ala
1021/341	1051/351
gac aac gtg tgg gcc atc ggc gat gcg acc	gtg ctg acg ctg ccg aat ggc aaa ccg ctg
asp asn val trp ala ile gly asp ala thr	val leu thr leu pro asn gly lys pro leu
1081/361	1111/371
ccc aag gct gcc gtg ttc gcc gaa gcc cag	gcc gca gtt gtc gcc cac ggc gtc gcc cgc
pro lys ala ala val phe ala glu ala gln	ala ala val val ala his gly val ala arg
1141/381	1171/391
cat ctc ggt tac gac gta gct gag cgc cac	ttc acc ggc acg ggc gcc tgc tac gtc gag
his leu gly tyr asp val ala glu arg his	phe thr gly thr gly ala cys tyr val glu
1201/401	1231/411
acc ggt gat cac cag gca gcc aag ggc gac	ggc gat ttc ttc gct ccg tcg gcg ccc tcg
thr gly asp his gln ala ala lys gly asp	gly asp phe phe ala pro ser ala pro ser
1261/421	1291/431
gtg acg ctg tac ccg ccg tcg cgg gag ttt	cac gag gag aag gtc gca caa gaa ctg gcc
val thr leu tyr pro pro ser arg glu phe	his glu glu lys val ala gln glu leu ala
1321/441	
tggtg acc cgc tgg aag acg tga	
trp leu thr arg trp lys thr OPA	

SEQ ID N° 48F (suite)

FIGURE 48F (suite)

166/185

Fragment amplifié par PCR d'après les similarités de séquences avec une sérine protéase de la famille htrA de E. coli (création du site BamHI à l'extrémité 5' et du site SnaBI à l'extrémité 3') et sous-cloné dans le vecteur pJVED:

```

1/1                               31/11
cca tct aca ccg ctc aac agc cgg gcc aga cgc tgc cgg tcg gtg ctg ccg aga agg cgg
pro ser thr pro leu asn ser arg ala arg arg cys arg ser val leu pro arg arg arg
61/21                               91/31
tga tcc gtg gcg agt tgt tca tgt cgc gcc gca cca ccg ccg acc aac ggg tgc ttg cca
OPA ser val ala ser cys ser cys arg gly ala pro pro pro thr asn gly cys leu pro
121/41                               151/51
tcc gtc tga cca acg gta gtt cgc tgc tga tct cca aaa gtc tca agc cca ccg aag cag
ser val OPA pro thr val val arg cys OPA ser pro lys val ser ser pro pro lys gln
181/61                               211/71
tca tga aca agc tgc gtt ggg tgc tat tga tgc tgg gtg gga tgc ggg tgg cgg tgc ccg
ser OPA thr ser cys val gly cys tyr OPA ser trp val gly ser gly trp arg ser pro
241/81                               271/91
cgg tgg ccg ggg gga tgg tca ccc ggg ccg gcc tga gcc cgg tgg gcc gcc tca ccg aag
arg trp pro gly gly trp ser pro gly pro gly OPA gly arg trp ala ala ser pro lys
301/101                               331/111
cgg ccg agc ggg tgg cgc gaa ccg acg acc tgc gcc cca tcc ccg tct tgc gca gcg acg
arg pro ser gly trp arg glu pro thr thr cys gly pro ser pro ser ser ala ala thr
361/121                               391/131
aat tgg cca gcc tga cag agg cat tca att taa tgc tgc ggg cgc tgg ccg agt cac ggg
asn trp pro gly OPA gln arg his ser ile OCH cys cys gly arg trp pro ser his gly
421/141                               451/151
aac gcc agg caa gcc tgg tta ccg acg ccg gac atg aat tgc gta ccc cgc taa cgt cgc
asn gly arg gln gly trp leu pro thr pro asp met asn cys val pro arg OCH arg arg
481/161                               511/171
tgc gca cca atg tgc aac tct tga tgg cct cga tgg ccc ccg ggg ctc cgc gcc tac cca
cys ala pro met ser asn ser OPA trp pro arg trp pro arg gly leu arg gly tyr pro
541/181                               571/191
agc agg aga tgg tgc acc tgc gtg ccg atg tgc tgg ctc aaa tgc agg aat tgt cca cac
ser arg arg trp ser thr cys val pro met cys trp leu lys ser arg asn cys pro his
601/201                               631/211
tgg tag gcg att tgg tgg acc tgt ccc gag gcg acg ccg gag aag tgg tgc acg agc cgg
trp AMB ala ile trp trp thr cys pro glu ala thr pro glu lys trp cys thr ser arg
661/221                               691/231
tgc aca tgg ctg acg tgc tgc acc gca gcc tgg agc ggg tca gcc gcc gcc gca acg ata
ser thr trp leu thr ser ser thr ala ala trp ser gly ser gly gly gly ala thr ile
721/241                               751/251
tcc ttt tgc acg tgc agg tga ttg ggt gcc agg ttt atg gcg ata ccg ctg gat tgt cgc
ser phe ser thr ser arg OPA leu gly gly arg phe met ala ile pro leu asp cys arg
781/261                               811/271
gga tgg cgc tta acc tga tgg aca acg ccg cga agt gga gcc cgc ccg gcg gcc acg tgg
gly trp arg leu thr OPA trp thr thr pro arg ser gly ala arg arg ala ala thr trp
841/281                               871/291
gtg tca gcc tga gcc agc tgc acg cgt cgc acg ctg agc tgg tgg ttt ccg acc gcg gcc
val ser gly OPA ala ser ser thr arg arg thr leu ser trp trp phe pro thr ala ala

```

SEQ ID N° 49A

FIGURE 49A

FEUILLE DE REMPLACEMENT (REGLE 26)

167/185

901/301
 cgg gca ttc ccg tgc agg agc gcc gtc tgg tgt ttg aac ggt ttt acc ggt cgg cat cgg
 arg ala phe pro cys arg ser ala val trp cys leu asn gly phe thr gly arg his arg
 961/321
 cac ggg cgt tgc cgg gtt cgg gcc tcg ggt tgg cga tcg tca aac agg tgg tgc tca acc
 his gly arg cys arg val arg ala ser gly trp arg ser ser asn arg trp cys ser thr
 1021/341
 acg gcg gat tgc tgc gca tcg aag aca ccg acc cag gcg gcc agc ccc ctg gaa cgt cga
 thr ala asp cys cys ala ser lys thr pro thr gln ala ala ser pro leu glu arg arg
 1081/361
 ttt acg tgc tgc tcc ccg gcc gtc gga tgc cga ttc cgc agc ttc ccg gtg cga cgg ctg
 phe thr cys cys ser pro ala val gly cys arg phe arg ser phe pro val arg arg leu
 1141/381
 gcg ctc gga gca cgg aca tcg aga act ctc ggg gtt cgg cga acg tta tct cag tgg aat
 ala leu gly ala arg thr ser arg thr leu gly val arg arg thr leu ser gln trp asn
 1201/401
 ctc agt cca cgc gcg caa cct agt tgt gca gtt act gtt gaa agc cac acc cat gcc agt
 leu ser pro arg ala gln pro ser cys ala val thr val glu ser his thr his ala ser
 1261/421
 cca cgc atg gcc aag ttg gcc cga gta gtg ggc cta gta cag gaa gag caa cct agc gac
 pro arg met ala lys leu ala arg val val gly leu val gln glu glu gln pro ser asp
 1321/441
 atg acg aat cac cca cgg tat tcg cca ccg ccg cag cag ccg gga acc cca ggt tat gct
 met thr asn his pro arg tyr ser pro pro pro gln gln pro gly thr pro gly tyr ala
 1381/461
 cag ggg cag cag caa acg tac agc cag cag ttc gac tgg cgt tac cca ccg tcc ccg ccc
 gln gly gln gln gln thr tyr ser gln gln phe asp trp arg tyr pro pro ser pro pro
 1441/481
 ccg cag cca acc cag tac cgt caa ccc tac gag gcg ttg ggt ggt acc cgg ccg ggt ctg
 pro gln pro thr gln tyr arg gln pro tyr glu ala leu gly gly thr arg pro gly leu
 1501/501
 ata cct ggc gtg att ccg acc atg acg ccc cct cct ggg atg gtt cgc caa cgc cct cgt
 ile pro gly val ile pro thr met thr pro pro pro gly met val arg gln arg pro arg
 1561/521
 gca ggc atg ttg gcc atc ggc gcg gtg acg ata gcg gtg gtg tcc gcc ggc atc ggc ggc
 ala gly met leu ala ile gly ala val thr ile ala val val ser ala gly ile gly gly
 1621/541
 gcg gcc gca tcc ctg gtc ggg ttc aac ccg gca ccc gcc ggc ccc agc ggc ggc cca gtg
 ala ala ala ser leu val gly phe asn arg ala pro ala gly pro ser gly gly pro val
 1681/561
 gct gcc agc gcg gcg cca agc atc ccc gca gca aac atg ccg ccg ggg tcg gtc gaa cag
 ala ala ser ala ala pro ser ile pro ala ala asn met pro pro gly ser val glu gln
 1741/581
 gtg gcg gcc aag gtg gtg ccc agt gtc gtc atg ttg gaa acc gat ctg ggc cgc cag tcg
 val ala ala lys val val pro ser val val met leu glu thr asp leu gly arg gln ser
 1801/601
 gag gag ggc tcc ggc atc att ctg tct gcc gag ggg ctg atc ttg acc aac aac cac gtg
 glu glu gly ser gly ile ile leu ser ala glu gly leu ile leu thr asn asn his val
 1861/621
 atc gcg gcg gcc gcc aag cct ccc ctg ggc agt ccg ccg ccg aaa acg acg gta
 ile ala ala ala ala lys pro pro leu gly ser pro pro pro lys thr thr val
 1891/631

SEQ ID N° 49A (suite 1)

FIGURE 49A (suite 1)

FEUILLE DE REMPLACEMENT (REGLE 26)

168/185

1/1
 cat cta cac cgc tca aca gcc ggg cca gac gct gcc ggt cgg tgc tgc cga gaa ggc ggt
 his leu his arg ser thr ala gly pro asp ala ala gly arg cys cys arg glu gly gly
 61/21
 gat ccg tgg cga gtt gtt cat gtc gcg gcg cac cac cgc cga cca acg ggt gct tgc cat
 asp pro trp arg val val his val ala ala his his arg arg pro thr gly ala cys his
 121/41
 ccg tct gac caa cgg tag ttc gct gct gat ctg caa aag tct caa gcc cac cga agc agt
 pro ser asp gln arg AMB phe ala ala asp leu gln lys ser gln ala his arg ser ser
 181/61
 cat gaa caa gct gcg ttg ggt gct att gat cgt ggg tgg gat ccg ggt ggc ggt cgc cgc
 his glu gln ala ala leu gly ala ile asp arg gly trp asp arg gly gly gly arg arg
 241/81
 ggt ggc cgg ggg gat ggt cac ccg ggc cgg gct gag gcc ggt ggg ccg cct cac cga agc
 gly gly arg gly asp gly his pro gly arg ala glu ala gly gly pro pro his arg ser
 301/101
 ggc cga gcg ggt ggc gcg aac cga cga cct gcg gcc cat ccc cgt ctt cgg cag cga cga
 gly arg ala gly gly ala asn arg arg pro ala ala his pro arg leu arg gln arg arg
 361/121
 att ggc cag gct gac aga ggc att caa ttt aat gct gcg ggc gct ggc cga gtc acg gga
 ile gly gln ala asp arg gly ile gln phe asn ala ala gly ala gly arg val thr gly
 421/141
 acg gca ggc aag gct ggt tac cga cgc cgg aca tga att gcg tac ccc gct aac gtc gct
 thr ala gly lys ala gly tyr arg arg arg thr opa ile ala tyr pro ala asn val ala
 481/161
 gcg cac caa tgt cga act ctt gat ggc ctg gat ggc ccc ggg ggc tcc gcg gct acc caa
 ala his gln cys arg thr leu asp gly leu asp gly pro gly gly ser ala ala thr gln
 541/181
 gca gga gat ggt cga cct gcg tgc cga tgt gct ggc tca aat cga gga att gtc cac act
 ala gly asp gly arg pro ala cys arg cys ala gly ser asn arg gly ile val his thr
 601/201
 ggt agg cga ttt ggt gga cct gtc ccg agg cga cgc cgg aga agt ggt gca cga gcc ggt
 gly arg arg phe gly gly pro val pro arg arg arg arg ser gly ala arg ala gly
 661/221
 cga cat ggc tga cgt cgt cga ccg cag cct gga gcg ggt cag gcg gcg gcg caa cga tat
 arg his gly opa arg arg arg pro gln pro gly ala gly gln ala ala ala gln arg tyr
 721/241
 cct ttt cga cgt cga ggt gat tgg gtg gca ggt tta tgg cga tac cgc tgg att gtc gcg
 pro phe arg arg arg gly asp trp val ala gly leu trp arg tyr arg trp ile val ala
 781/261
 gat ggc gct taa cct gat gga caa cgc cgc gaa gtg gag ccc gcc ggg cgg cca cgt ggg
 asp gly ala OCH pro asp gly gln arg arg glu val glu pro ala gly arg pro arg gly
 841/281
 tgt cag gct gag cca gct cga cgc gtc gca cgc tga gct ggt ggt ttc cga ccg cgg ccc
 cys gln ala glu pro ala arg arg val ala arg opa ala gly gly phe arg pro arg pro
 901/301
 ggg cat tcc cgt gca gga gcg ccg tct ggt gtt tga acg gtt tta ccg gtc ggc atc ggc
 gly his ser arg ala gly ala pro ser gly val opa thr val leu pro val gly ile gly
 961/321
 acg ggc gtt gcc ggg ttc ggg cct cgg gtt ggc gat cgt caa aca ggt ggt gct caa cca
 thr gly val ala gly phe gly pro arg val gly asp arg gln thr gly gly ala gln pro
 1021/341
 cgg cgg att gct gcg cat cga aga cac cga ccc agg cgg cca gcc ccc tgg aac gtc gat
 arg arg ile ala ala his arg arg his arg pro arg arg pro ala pro trp asn val asp
 1051/351

SEQ ID N° 49B

FEUILLE DE REMPLACEMENT (REGLE 26)

169/185

1081/361
 tta cgt gct gct ccc cgg ccg tcg gat gcc gat tcc gca gct tcc cgg tgc gac ggc tgg
 leu arg ala ala pro arg pro ser asp ala asp ser ala ala ser arg cys asp gly trp
 1141/381
 cgc tcg gag cac gga cat cga gaa ctc tcg ggg ttc ggc gaa cgt tat ctc agt gga atc
 arg ser glu his gly his arg glu leu ser gly phe gly glu arg tyr leu ser gly ile
 1201/401
 tca gtc cac gcg cgc aac cta gtt gtg cag tta ctg ttg aaa gcc aca ccc atg cca gtc
 ser val his ala arg asn leu val val gln leu leu leu lys ala thr pro met pro val
 1261/421
 cac gca tgg cca agt tgg ccc gag tag tgg gcc tag tac agg aag agc aac cta gcg aca
 his ala trp pro ser trp pro glu AMB trp ala AMB tyr arg lys ser asn leu ala thr
 1321/441
 tga cga atc acc cac ggt att cgc cac cgc cgc agc agc agc cgg gaa ccc cag gtt atg ctc
 OPA arg ile thr his gly ile arg his arg arg ser ser arg glu pro gln val met leu
 1381/461
 agg ggc agc agc aaa cgt aca gcc agc agt tcg act ggc gtt acc cac cgt ccc cgc ccc
 arg gly ser ser lys arg thr ala ser ser ser thr gly val thr his arg pro arg pro
 1441/481
 cgc agc caa ccc agt acc gtc aac cct acg agg cgt tgg gtg gta ccc ggc cgg gtc tga
 arg ser gln pro ser thr val asn pro thr arg arg trp val val pro gly arg val OPA
 1501/501
 tac ctg gcg tga ttc cga cca tga cgc ccc ctc ctg gga tgg ttc gcc aac gcc ctc gtg
 tyr leu ala OPA phe arg pro OPA arg pro leu leu gly trp phe ala asn ala leu val
 1561/521
 cag gca tgt tgg cca tcg gcg cgg tga cga tag cgg tgg tgt ccg ccg gca tcg gcg gcg
 gln ala cys trp pro ser ala arg OPA arg AMB arg trp cys pro pro ala ser ala ala
 1621/541
 cgg ccg cat ccc tgg tcg ggt tca acc ggg cac ccg ccg gcc cca gcg gcg gcc cag tgg
 arg pro his pro trp ser gly ser thr gly his pro pro ala pro ala ala ala gln trp
 1681/561
 ctg cca gcg cgg cgc caa gca tcc ccg cag caa aca tgc cgc cgg ggt cgg tcg aac agg
 leu pro ala arg arg gln ala ser pro gln gln thr cys arg arg gly arg ser asn arg
 1741/581
 tgg cgg cca agg tgg tgc cca gtg tcg tca tgt tgg aaa ccg atc tgg gcc gcc agt cgg
 trp arg pro arg trp cys pro val ser ser cys trp lys pro ile trp ala ala ser arg
 1801/601
 agg agg gct ccg gca tca ttc tgt ctg ccg agg ggc tga tct tga cca aca acc acg tga
 arg arg ala pro ala ser phe cys leu pro arg gly OPA ser OPA pro thr thr thr OPA
 1861/621
 tcg cgg cgg ccg cca agc ctc ccc tgg gca gtc cgc cgc cga aaa cga cgg ta
 ser arg arg pro pro ser leu pro trp ala val arg arg arg lys arg arg

SEQ ID N° 49B (suite 1)

FIGURE 49B (suite 1)

170/185

```

1/1
atc tac acc gct caa cag ccg ggc cag acg ctg ccg gtc ggt gct gcc gag aag gcg gtg
ile tyr thr ala gln gln pro gly gln thr leu pro val gly ala ala glu lys ala val
61/21
atc cgt ggc gag ttg ttc atg tcg ccg cgc acc acc gcc gac caa cgg gtg ctt gcc atc
ile arg gly glu leu phe met ser arg arg thr thr ala asp gln arg val leu ala ile
121/41
cgt ctg acc aac ggt agt tcg ctg ctg atc tcc aaa agt ctc aag ccc acc gaa gca gtc
arg leu thr asn gly ser ser leu leu ile ser lys ser leu lys pro thr glu ala val
181/61
atg aac aag ctg cgt tgg gtg cta ttg atc gtg ggt ggg atc ggg gtg gcg gtc gcc gcg
met asn lys leu arg trp val leu leu ile val gly gly ile gly val ala val ala ala
241/81
gtg gcc ggg ggg atg gtc acc ccg gcc ggg ctg agg ccg gtg ggc cgc ctc acc gaa gcg
val ala gly gly met val thr arg ala gly leu arg pro val gly arg leu thr glu ala
301/101
gcc gag ccg gtg gcg cga acc gac gac ctg ccg ccc atc ccc gtc ttc ggc agc gac gaa
ala glu arg val ala arg thr asp asp leu arg pro ile pro val phe gly ser asp glu
361/121
ttg gcc agg ctg aca gag gca ttc aat tta atg ctg ccg gcg ctg gcc gag tca ccg gaa
leu ala arg leu thr glu ala phe asn leu met leu arg ala leu ala glu ser arg glu
421/141
cgg cag gca agg ctg gtt acc gac gcc gga cat gaa ttg cgt acc ccg cta acg tcg ctg
arg gln ala arg leu val thr asp ala gly his glu leu arg thr pro leu thr ser leu
481/161
cgc acc aat gtc gaa ctc ttg atg gcc tcg atg gcc ccg ggg gct ccg ccg cta ccc aag
arg thr asn val glu leu leu met ala ser met ala pro gly ala pro arg leu pro lys
541/181
cag gag atg gtc gac ctg cgt gcc gat gtg ctg gct caa atc gag gaa ttg tcc aca ctg
gln glu met val asp leu arg ala asp val leu ala gln ile glu glu leu ser thr leu
601/201
gta gcc gat ttg gtg gac ctg tcc cga gcc gac gcc gga gaa gtg gtg cac gag ccg gtc
val gly asp leu val asp leu ser arg gly asp ala gly glu val val his glu pro val
661/221
gac atg gct gac gtc gtc gac cgc agc ctg gag ccg gtc agg ccg ccg cgc aac gat atc
asp met ala asp val val asp arg ser leu glu arg val arg arg arg arg asn asp ile
721/241
ctt ttc gac gtc gag gtg att ggg tgg cag gtt tat ggc gat acc gct gga ttg tcg ccg
leu phe asp val glu val ile gly trp gln val tyr gly asp thr ala gly leu ser arg
781/261
atg gcg ctt aac ctg atg gac aac gcc gcg aag tgg agc ccg ccg ggc ggc cac gtg ggt
met ala leu asn leu met asp asn ala ala lys trp ser pro pro gly gly his val gly
841/281
gtc agg ctg agc cag ctc gac gcg tcg cac gct gag ctg gtg gtt tcc gac cgc gcc ccg
val arg leu ser gln leu asp ala ser his ala glu leu val val ser asp arg gly pro
901/301
ggc att ccc gtg cag gag cgc cgt ctg gtg ttt gaa ccg ttt tac ccg tcg gca tcg gca
gly ile pro val gln glu arg arg leu val phe glu arg phe tyr arg ser ala ser ala
961/321
cgg gcg ttg ccg ggt tcg ggc ctc ggg ttg gcg atc gtc aaa cag gtg gtg ctc aac cac
arg ala leu pro gly ser gly leu gly leu ala ile val lys gln val val leu asn his

```

SEQ ID N° 49C

FIGURE 49C
FEUILLE DE REMPLACEMENT (REGLE 26)

171/185

1021/341
 ggc gga ttg ctg cgc atc gaa gac acc gac cca ggc ggc cag ccc cct gga acg tcg att
 gly gly leu leu arg ile glu asp thr asp pro gly gly gln pro pro gly thr ser ile
 1081/361
 tac gtg ctg ctc ccc ggc cgt cgg atg ccg att ccg cag ctt ccc ggt gcg acg gct ggc
 tyr val leu leu pro gly arg arg met pro ile pro gln leu pro gly ala thr ala gly
 1141/381
 gct cgg agc acg gac atc gag aac tct cgg ggt tcg gcg aac gtt atc tca gtg gaa tct
 ala arg ser thr asp ile glu asn ser arg gly ser ala asn val ile ser val glu ser
 1201/401
 cag tcc acg cgc gca acc tag ttg tgc agt tac tgt tga aag cca cac cca tgc cag tcc
 gln ser thr arg ala thr AMB leu cys ser tyr cys OPA lys pro his pro cys gln ser
 1261/421
 acg cat ggc caa gtt ggc ccg agt agt ggg cct agt aca gga aga gca acc tag cga cat
 thr his gly gln val gly pro ser ser gly pro ser thr gly arg ala thr AMB arg his
 1321/441
 gac gaa tca ccc acg gta ttc gcc acc gcc gca gca gcc ggg aac ccc agg tta tgc tca
 asp glu ser pro thr val phe ala thr ala ala ala ala gly asn pro arg leu cys ser
 1381/461
 ggg gca gca gca aac gta cag cca gca gtt cga ctg gcg tta ccc acc gtc ccc gcc ccc
 gly ala ala ala asn val gln pro ala val arg leu ala leu pro thr val pro ala pro
 1441/481
 gca gcc aac cca gta ccg tca acc cta cga ggc gtt ggg tgg tac ccg gcc ggg tct gat
 ala ala asn pro val pro ser thr leu arg gly val gly trp tyr pro ala gly ser asp
 1501/501
 acc tgg cgt gat tcc gac cat gac gcc ccc tcc tgg gat ggt tcg cca acg ccc tcg tgc
 thr trp arg asp ser asp his asp ala pro ser trp asp gly ser pro thr pro ser cys
 1561/521
 agg cat gtt ggc cat cgg cgc ggt gac gat agc ggt ggt gtc cgc cgg cat cgg cgg cgc
 arg his val gly his arg arg gly asp asp ser gly gly val arg arg his arg arg arg
 1621/541
 ggc cgc atc cct ggt cgg gtt caa ccg ggc acc cgc cgg ccc cag cgg cgg ccc agt ggc
 gly arg ile pro gly arg val gln pro gly thr arg arg pro gln arg arg pro ser gly
 1681/561
 tgc cag cgc ggc gcc aag cat ccc cgc agc aaa cat gcc gcc ggg gtc ggt cga aca ggt
 cys gln arg gly ala lys his pro arg ser lys his ala ala gly val gly arg thr gly
 1741/581
 ggc ggc caa ggt ggt gcc cag tgt cgt cat gtt gga aac cga tct ggg ccg cca gtc gga
 gly gly gln gly gly ala gln cys arg his val gly asn arg ser gly pro pro val gly
 1801/601
 gga ggg ctc cgg cat cat tct gtc tgc cga ggg gct gat ctt gac caa caa cca cgt gat
 gly gly leu arg his his ser val cys arg gly ala asp leu asp gln gln pro arg asp
 1861/621
 cgc ggc ggc cgc caa gcc tcc cct ggg cag tcc gcc gcc gaa aac gac ggt a
 arg gly gly arg gln ala ser pro gly gln ser ala ala glu asn asp gly

SEQ ID N° 49C (suite 1)

FIGURE 49C (suite 1)

FEUILLE DE REMPLACEMENT (REGLE 26)

172/185

Séquence codante Rv0983 prédite par Cole et al., 1998 (Nature 393:537-544) et contenant seq60A:

```

1/1                                31/11
atg gcc aag ttg gcc cga gta gtg ggc cta gta cag gaa gag caa cct agc gac atg acg
Met ala lys leu ala arg val val gly leu val gln glu glu gln pro ser asp met thr
61/21                                91/31
aat cac cca cgg tat tcg cca ccg ccg cag cag ccg gga acc cca ggt tat gct cag ggg
asn his pro arg tyr ser pro pro pro gln gln pro gly thr pro gly tyr ala gln gly
121/41                               151/51
cag cag caa acg tac agc cag cag ttc gac tgg cgt tac cca ccg tcc ccg ccc ccg cag
gln gln gln thr tyr ser gln gln phe asp trp arg tyr pro pro ser pro pro pro gln
181/61                               211/71
cca acc cag tac cgt caa ccc tac gag gcg ttg ggt ggt acc ccg ccg ggt ctg ata cct
pro thr gln tyr arg gln pro tyr glu ala leu gly gly thr arg pro gly leu ile pro
241/81                               271/91
ggc gtg att ccg acc atg acg ccc cct cct ggg atg gtt cgc caa cgc cct cgt gca ggc
gly val ile pro thr met thr pro pro pro gly met val arg gln arg pro arg ala gly
301/101                             331/111
atg ttg gcc atc ggc gcg gtg acg ata gcg gtg gtg tcc gcc gcc atc gcc gcc gcg gcc
met leu ala ile gly ala val thr ile ala val val ser ala gly ile gly gly ala ala
361/121                             391/131
gca tcc ctg gtc ggg ttc aac ccg gca ccc gcc gcc ccc agc gcc gcc cca gtg gct gcc
ala ser leu val gly phe asn arg ala pro ala gly pro ser gly gly pro val ala ala
421/141                             451/151
agc gcg gcg cca agc atc ccc gca gca aac atg ccg ccg ggg tcg gtc gaa cag gtg gcg
ser ala ala pro ser ile pro ala ala asn met pro pro gly ser val glu gln val ala
481/161                             511/171
gcc aag gtg gtg ccc agt gtc gtc atg ttg gaa acc gat ctg gcc cgc cag tcg gag gag
ala lys val val pro ser val val met leu glu thr asp leu gly arg gln ser glu glu
541/181                             571/191
ggc tcc gcc atc att ctg tct gcc gag ggg ctg atc ttg acc aac aac cac gtg atc gcg
gly ser gly ile ile leu ser ala glu gly leu ile leu thr asn asn his val ile ala
601/201                             631/211
gcg gcc gcc aag cct ccc ctg gcc agt ccg ccg ccg aaa acg acg gta acc ttc tct gac
ala ala ala lys pro pro leu gly ser pro pro pro lys thr thr val thr phe ser asp
661/221                             691/231
ggg ccg acc gca ccc ttc acg gtg gtg ggg gct gac ccc acc agt gat atc gcc gtc gtc
gly arg thr ala pro phe thr val val gly ala asp pro thr ser asp ile ala val val
721/241                             751/251
cgt gtt cag gcc gtc tcc ggg ctc acc ccg atc tcc ctg ggt tcc tcc tcg gac ctg agg
arg val gln gly val ser gly leu thr pro ile ser leu gly ser ser ser asp leu arg
781/261                             811/271
gtc ggt cag ccg gtg ctg gcg atc ggg tcg ccg ctc ggt ttg gag gcc acc gtg acc acg
val gly gln pro val leu ala ile gly ser pro leu gly leu glu gly thr val thr thr

```

SEQ ID N° 49D

FIGURE 49D

FEUILLE DE REMPLACEMENT (REGLE 26)

173/185

841/281

ggg atc gtc agc gct ctc aac cgt cca gtg tcg acg acc ggc gag gcc ggc aac cag aac
gly ile val ser ala leu asn arg pro val ser thr thr gly glu ala gly asn gln asn
901/301

acc gtg ctg gac gcc att cag acc gac gcc gcg atc aac ccc ggt aac tcc ggg ggc gcg
thr val leu asp ala ile gln thr asp ala ala ile asn pro gly asn ser gly gly ala
961/321

ctg gtg aac atg aac gct caa ctc gtc gga gtc aac tcg gcc att gcc acg ctg ggc gcg
leu val asn met asn ala gln leu val gly val asn ser ala ile ala thr leu gly ala
1021/341

gac tca gcc gat gcg cag agc ggc tcg atc ggt ctc ggt ttt gcg att cca gtc gac cag
asp ser ala asp ala gln ser gly ser ile gly leu gly phe ala ile pro val asp gln
1081/361

gcc aag cgc atc gcc gac gag ttg atc agc acc ggc aag gcg tca cat gcc tcc ctg ggt
ala lys arg ile ala asp glu leu ile ser thr gly lys ala ser his ala ser leu gly
1141/381

gtg cag gtg acc aat gac aaa gac acc ctg ggc gcc aag atc gtc gaa gta gtg gcc ggt
val gln val thr asn asp lys asp thr leu gly ala lys ile val glu val val ala gly
1201/401

ggt gct gcc gcg aac gct gga gtg ccg aag ggc gtc gtt gtc acc aag gtc gac gac cgc
gly ala ala ala asn ala gly val pro lys gly val val val thr lys val asp asp arg
1261/421

ccg atc aac agc gcg gac gcg ttg gtt gcc gcc gtg ccg tcc aaa gcg ccg ggc gcc acg
pro ile asn ser ala asp ala leu val ala ala val arg ser lys ala pro gly ala thr
1321/441

gtg gcg cta acc ttt cag gat ccc tcg ggc ggt agc cgc aca gtg caa gtc acc ctc ggc
val ala leu thr phe gln asp pro ser gly gly ser arg thr val gln val thr leu gly
1381/461

aag gcg gag cag tga
lys ala glu gln opa

871/291

931/311

991/331

1051/351

1111/371

1171/391

1231/411

1291/431

1351/451

SEQ ID N° 49D (suite 1)

FIGURE 49D (suite 1)

174/185

ORF d'après Cole et al., 1998 (Nature 393:537-544) et contenant Rv0983

```

1/1                                31/11
tga gcc agc tcg acg cgt cgc acg ctg agc tgg tgg ttt ccg acc gcg gcc cgg gca ttc
OPA ala ser ser thr arg arg thr leu ser trp trp phe pro thr ala ala arg ala phe
61/21                                91/31
ccg tgc agg agc gcc gtc tgg tgt ttg aac ggt ttt acc ggt cgg cat cgg cac ggg cgt
pro cys arg ser ala val trp cys leu asn gly phe thr gly arg his arg his gly arg
121/41                                151/51
tgc cgg gtt cgg gcc tcg ggt tgg cga tcg tca aac agg tgg tgc tca acc acg gcg gat
cys arg val arg ala ser gly trp arg ser ser asn arg trp cys ser thr thr ala asp
181/61                                211/71
tgc tgc gca tcg aag aca ccg acc cag gcg gcc agc ccc ctg gaa cgt cga ttt acg tgc
cys cys ala ser lys thr pro thr gln ala ala ser pro leu glu arg arg phe thr cys
241/81                                271/91
tgc tcc ccg gcc gtc gga tgc cga ttc cgc agc ttc ccg gtg cga cgg ctg gcg ctc gga
cys ser pro ala val gly cys arg phe arg ser phe pro val arg arg leu ala leu gly
301/101                                331/111
gca cgg aca tcg aga act ctc ggg gtt cgg cga acg tta tct cag tgg aat ctc agt cca
ala arg thr ser arg thr leu gly val arg arg thr leu ser gln trp asn leu ser pro
361/121                                391/131
cgc gcg caa cct agt tgt gca gtt act gtt gaa agc cac acc cat gcc agt cca cgc atg
arg ala gln pro ser cys ala val thr val glu ser his thr his ala ser pro arg met
421/141                                451/151
gcc aag ttg gcc cga gta gtg ggc cta gta cag gaa gag caa cct agc gac atg acg aat
ala lys leu ala arg val val gly leu val gln glu glu gln pro ser asp met thr asn
481/161                                511/171
cac cca cgg tat tcg cca ccg ccg cag cag ccg gga acc cca ggt tat gct cag ggg cag
his pro arg tyr ser pro pro pro gln gln pro gly thr pro gly tyr ala gln gly gln
541/181                                571/191
cag caa acg tac agc cag cag ttc gac tgg cgt tac cca ccg tcc ccg ccc ccg cag cca
gln gln thr tyr ser gln gln phe asp trp arg tyr pro pro ser pro pro pro gln pro
601/201                                631/211
acc cag tac cgt caa ccc tac gag gcg ttg ggt ggt acc ccg ccg ggt ctg ata cct ggc
thr gln tyr arg gln pro tyr glu ala leu gly gly thr arg pro gly leu ile pro gly
661/221                                691/231
gtg att ccg acc atg acg ccc cct cct ggg atg gtt cgc caa cgc cct cgt gca ggc atg
val ile pro thr met thr pro pro pro gly met val arg gln arg pro arg ala gly met
721/241                                751/251
ttg gcc atc ggc gcg gtg acg ata gcg gtg gtg tcc gcc ggc atc ggc ggc gcg gcc gca
leu ala ile gly ala val thr ile ala val val ser ala gly ile gly gly ala ala ala
781/261                                811/271
tcc ctg gtc ggg ttc aac cgg gca ccc gcc ggc ccc agc ggc ggc cca gtg gct gcc agc
ser leu val gly phe asn arg ala pro ala gly pro ser gly gly pro val ala ala ser
841/281                                871/291
gcg gcg cca agc atc ccc gca gca aac atg ccg ccg ggg tcg gtc gaa cag gtg gcg gcc
ala ala pro ser ile pro ala ala asn met pro pro gly ser val glu gln val ala ala

```

SEQ ID N° 49F

FIGURE 49F

FEUILLE DE REMPLACEMENT (RÈGLE 26)

175/185

901/301
 aag gtg gtg ccc agt gtc gtc atg ttg gaa acc gat ctg ggc cgc cag tcg gag gag ggc
 lys val val pro ser val val met leu glu thr asp leu gly arg gln ser glu glu gly
 961/321
 tcc ggc atc att ctg tct gcc gag ggg ctg atc ttg acc aac aac cac gtg atc gcg gcg
 ser gly ile ile leu ser ala glu gly leu ile leu thr asn asn his val ile ala ala
 1021/341
 gcc gcc aag cct ccc ctg ggc agt ccg ccg ccg aaa acg acg gta acc ttc tct gac ggc
 ala ala lys pro pro leu gly ser pro pro pro lys thr thr val thr phe ser asp gly
 1081/361
 cgg acc gca ccc ttc acg gtg gtg ggg gct gac ccc acc agt gat atc gcc gtc gtc cgt
 arg thr ala pro phe thr val val gly ala asp pro thr ser asp ile ala val val arg
 1141/381
 gtt cag ggc gtc tcc ggg ctc acc ccg atc tcc ctg ggt tcc tcc tcg gac ctg agg gtc
 val gln gly val ser gly leu thr pro ile ser leu gly ser ser ser asp leu arg val
 1201/401
 ggt cag ccg gtg ctg gcg atc ggg tcg ccg ctc ggt ttg gag ggc acc gtg acc acg ggg
 gly gln pro val leu ala ile gly ser pro leu gly leu glu gly thr val thr thr gly
 1261/421
 atc gtc agc gct ctc aac cgt cca gtg tcg acg acc ggc gag gcc ggc aac cag aac acc
 ile val ser ala leu asn arg pro val ser thr thr gly glu ala gly asn gln asn thr
 1321/441
 gtg ctg gac gcc att cag acc gac gcc gcg atc aac ccc ggt aac tcc ggg ggc gcg ctg
 val leu asp ala ile gln thr asp ala ala ile asn pro gly asn ser gly gly ala leu
 1381/461
 gtg aac atg aac gct caa ctc gtc gga gtc aac tcg gcc att gcc acg ctg ggc gcg gac
 val asn met asn ala gln leu val gly val asn ser ala ile ala thr leu gly ala asp
 1441/481
 tca gcc gat gcg cag agc ggc tcg atc ggt ctc ggt ttt gcg att cca gtc gac cag gcc
 ser ala asp ala gln ser gly ser ile gly leu gly phe ala ile pro val asp gln ala
 1501/501
 aag cgc atc gcc gac gag ttg atc agc acc ggc aag gcg tca cat gcc tcc ctg ggt gtg
 lys arg ile ala asp glu leu ile ser thr gly lys ala ser his ala ser leu gly val
 1561/521
 cag gtg acc aat gac aaa gac acc ctg ggc gcc aag atc gtc gaa gta gtg gcc ggt ggt
 gln val thr asn asp lys asp thr leu gly ala lys ile val glu val val ala gly gly
 1621/541
 gct gcc gcg aac gct gga gtg ccg aag ggc gtc gtt gtc acc aag gtc gac gac cgc ccg
 ala ala ala asn ala gly val pro lys gly val val val thr lys val asp asp arg pro
 1681/561
 atc aac agc gcg gac gcg ttg gtt gcc gcc gtg ccg tcc aaa gcg ccg ggc gcc acg gtg
 ile asn ser ala asp ala leu val ala ala val arg ser lys ala pro gly ala thr val
 1741/581
 gcg cta acc ttt cag gat ccc tcg ggc ggt agc cgc aca gtg caa gtc acc ctc ggc aag
 ala leu thr phe gln asp pro ser gly gly ser arg thr val gln val thr leu gly lys
 1801/601
 gcg gag cag tga
 ala glu gln OPA

SEQ ID N° 49F (suite 1)

FIGURE 49F (suite 1)

FEUILLE DE REMPLACEMENT (REGLE 26)

176/185

Fragment amplifié par PCR d'après les similarités de séquence avec une sérine protéase de la famille HtrA de E. coli (création du site SnaBI à l'extrémité 3') et sous cloné dans le vecteur pJVEDa:

```

1/1                                     31/11
gat ccg gcg ggg cgg gtg tgg gcg cag gcg tgg ctg gcg gtc acg gcg gtg cgg gcg gtg
asp pro ala gly arg val ser ala gln ala trp leu ala val thr ala val arg ala val
61/21                                     91/31
ccg ccg ggc tgt ggg gcg ccg gcg gcg gcg gtg gca atg gcg gga acg gcg ccg atg cca
pro pro gly cys gly ala pro ala ala ala val ala met ala gly thr ala pro met pro
121/41                                     151/51
aca tgg tca gcg gtg gag acg gtg gcc tgg gcg gtg ccg gtg gcg gtg gcg gat ggc tct
thr ser ser ala val glu thr val ala ser ala val pro val ala val ala asp gly ser
181/61                                     211/71
acg gcg acg gcg ggg ccg gcg gac acg gcg gac aag gcg caa tgg gcc tgg gcg gcg gcg
thr ala thr ala gly pro ala asp thr ala asp lys ala gln ser ala ser ala ala ala
241/81                                     271/91
ccg gcg gcg acg ggg gcc agg gcg gcg ccg gcc gcg gac tgt ggg gta ctg gcg gcg ccg
pro ala ala thr gly ala arg ala ala pro ala ala asp cys gly val leu ala ala pro
301/101                                     331/111
gcg gac acg gcg ggc aag gcg gtg gta ccg ggg gcc cac cgc tgc ccg gtc agg cag gca
ala asp thr ala gly lys ala val val pro gly ala his arg cys pro val arg gln ala
361/121                                     391/131
tgg gcg ccg cgg gtg gcg ccg gtg gcc tga tgg gca acg gcg ggg ccg gcg gcg acg gcg
trp ala pro arg val ala pro val gly opa ser ala thr ala gly pro ala ala thr ala
421/141                                     451/151
gtg tgg gcg cgt ccg gcg ggg tgg ccg gag tag gcg gtg ccg gcg gga acg cca tgc tga
val ser ala arg pro ala gly ser pro glu amb ala val pro ala gly thr pro cys opa
481/161                                     511/171
tgg ggc acg gcg gcg ccg gcg gcg ccg gcg gag aca gca gtt tgg cta atg gcg cgg ccg
ser gly thr ala ala pro ala ala pro ala glu thr ala val ser leu met ala arg pro
541/181                                     571/191
gcg gcg ccg gcg gtg ccg gag gcc acc tct tgg gca atg gcg ggt ccg gcg gcc acg gcg
ala ala arg ala val pro glu gly thr ser ser ala met ala gly pro ala ala thr ala
601/201                                     631/211
gag ccg tca cgg ccg gca aca ccg gta tgg gtg gcg ccg gcg gcg tgg gtg ggg acg cca
glu pro ser arg pro ala thr pro val ser val ala pro ala ala ser val gly thr pro
661/221                                     691/231
ggc tga tgg gcc acg gtg gcg ccg gcg gtg ccg gcg ggg acc gcg ccg gag cct tgg ttg
gly opa ser ala thr val ala pro ala val pro ala gly thr ala pro glu pro trp leu
721/241                                     751/251
gcc gtg acg gcg ggc ccg gtg gga acg ggg gcg ctg gcg gcc agc tat acg gca acg gcg
ala val thr ala gly pro val gly thr gly ala leu ala ala ser tyr thr ala thr ala
781/261                                     811/271
gcg acg gcg ccc ccg gca ccg gcg gaa cac tgc agg ccg ccg tga gcg gat tgg tga ccg
ala thr ala pro pro ala pro ala glu his cys arg arg arg opa ala asp trp opa arg
841/281                                     871/291
ctt tgt tgg gtg cac ccg gcc aac ccg gcg aca ccg gcc aac ccg gct agc ccc gat caa
leu cys ser val his pro ala asn pro ala thr pro ala asn pro ala ser pro asp gln
901/301                                     931/311
cga ggg ttt cgg tgc cgg tcc ggg gca tgg cca tcc gct gag ctg gcg atc tgg act acg
arg gly phe arg cys arg ser gly ala trp pro ser ala glu leu ala ile trp thr thr
961/321                                     991/331
ttg gtg tag aaa aat cct gcc gcc ccg acc ctt aag gct ggg aca att tct gat agc tac
leu val amb lys asn pro ala ala arg thr leu lys ala gly thr ile ser asp ser tyr
1021/341                                     1051/351
ccc gac aca gga ggt tac ggg atg agc aat tgg cgc cgc cgc tca ctc agg tgg tca tgg
pro asp thr gly gly tyr gly met ser asn ser arg arg arg ser leu arg trp ser trp
1081/361                                     1111/371
ttg ctg agc gtg ctg gct gcc gtc ggg ctg ggc ctg gcc acg gcg ccg gcc cag gcg gcc
leu leu ser val leu ala ala val gly leu gly leu ala thr ala pro ala gln ala ala
1141/381
ccg ccg gcc ttg tgg cag gac ccg tt
pro pro ala leu ser gln asp arg

```

SEQ ID N° 50A

FEUILLE DE REMPLACEMENT (REGLE 26)

FIGURE 50A

177/185

1/1
 atc cgg cgg ggc ggg tgt cgg cgc agg cgt ggc tgg cgg tca cgg cgg tgc ggg cgg tgc
 ile arg arg gly gly cys arg arg arg arg gly trp arg ser arg arg cys gly arg cys
 61/21
 cgc cgg gct gtg ggg cgc cgg cgg cgg cgg tgg caa tgg cgg gaa cgg cgc cga tgc caa
 arg arg ala val gly arg arg arg arg arg trp gln trp arg glu arg arg arg cys gln
 121/41
 cat cgt cag cgg tgg aga cgg tgg cct cgg cgg tgc cgg tgg cgg tgg cgg atg gct cta
 his arg gln arg trp arg arg trp pro arg arg cys arg trp arg trp arg met ala leu
 181/61
 cgg cga cgg cgg ggc cgg cgg aca cgg cgg aca agg cgc aat cgg cct cgg cgg cgg cgc
 arg arg arg arg gly arg arg thr arg arg thr arg arg asn arg pro arg arg arg arg
 241/81
 cgg cgg cga cgg ggg cca ggg cgg cgc cgg cgg cgg act gtg ggg tac tgg cgg cgc cgg
 arg arg arg arg gly pro gly arg arg arg pro arg thr val gly tyr trp arg arg arg
 301/101
 cgg aca cgg cgg gca agg cgg tgg tac cgg ggg ccc acc gct gcc cgg tca ggc agg cat
 arg thr arg arg ala arg arg trp tyr arg gly pro thr ala ala arg ser gly arg his
 361/121
 ggg cgc cgc ggg tgg cgc cgg tgg gct gat cgg caa cgg cgg ggc cgg cgg cga cgg cgg
 gly arg arg gly trp arg arg trp ala asp arg gln arg arg gly arg arg arg arg arg
 421/141
 tgt cgg cgc gtc cgg cgg ggt cgc cgg agt agg cgg tgc cgg cgg gaa cgc cat gct gat
 cys arg arg val arg arg gly arg arg ser arg arg cys arg arg glu arg his ala asp
 481/161
 cgg gca cgg cgg cgc cgg cgg cgc cgg cgg aga cag cag ttt cgc taa tgg cgc ggc cgg
 arg ala arg arg arg arg arg arg arg arg arg gln gln phe arg OCH trp arg gly arg
 541/181
 cgg cgc ggg cgg tgc cgg agg gca cct ctt cgg caa tgg cgg gtc cgg cgg cca cgg cgg
 arg arg gly arg cys arg arg ala pro leu arg gln trp arg val arg arg pro arg arg
 601/201
 agc cgt cac ggc cgg caa cac cgg tat cgg tgg cgc cgg cgg cgt cgg tgg gga cgc cag
 ser arg his gly arg gln his arg tyr arg trp arg arg arg arg arg trp gly arg gln
 661/221
 gct gat cgg cca cgg tgg cgc cgg cgg tgc cgg cgg gga ccg cgc cgg agc ctt ggt tgg
 ala asp arg pro arg trp arg arg arg cys arg arg gly pro arg arg ser leu gly trp
 721/241
 ccg tga cgg cgg gcc cgg tgg gaa cgg ggg cgc tgg cgg cca gct ata cgg caa cgg cgg
 pro OPA arg arg ala arg trp glu arg gly arg trp arg pro ala ile arg gln arg arg
 781/261
 cga cgg cgc ccc cgg cac cgg cgg aac act gca gcc gcc ggt gag cgg att ggt gac gcc
 arg arg arg pro arg his arg arg asn thr ala gly gly gly glu arg ile gly asp gly
 841/281
 ttt gtt cgg tgc acc cgg cca acc cgg cga cac cgg cca acc cgg cta gcc ccg atc aac
 phe val arg cys thr arg pro thr arg arg his arg pro thr arg leu ala pro ile asn
 901/301
 gag ggt ttc ggt gcc ggt ccg ggg cat gcc cat ccg ctg agc tgg cga tct gga cta cgt
 glu gly phe gly ala gly pro gly his gly his pro leu ser trp arg ser gly leu arg
 961/321
 tgg tgt aga aaa atc ctg ccg ccc gga ccc tta agg ctg gga caa ttt ctg ata gct acc
 trp cys arg lys ile leu pro pro gly pro leu arg leu gly gln phe leu ile ala thr
 1021/341
 ccg aca cag gag gtt acg gga tga gca att cgc gcc gcc gct cac tca ggt ggt cat ggt
 pro thr gln glu val thr gly OPA ala ile arg ala ala ala his ser gly gly his gly
 1081/361
 tgc tga gcg tgc tgg ctg ccg tgc ggc tgg gcc tgg cca cgg cgc cgg ccc agg cgg ccc
 cys OPA ala cys trp leu pro ser gly trp ala trp pro arg arg arg pro arg arg pro
 1141/381
 cgc cgg cct tgt cgc agg acc ggt t
 arg arg pro cys arg arg thr gly

SEQ ID N° 50B

FIGURE 50B
 FEUILLE DE REMPLACEMENT (REGLE 26)

178/185

1/1
 tcc gcc ggg gcg ggt gtc gcc gca gcc gtg gct gcc ggt cac gcc ggt gcg gcc ggt gcc
 ser gly gly ala gly val gly ala gly val ala gly gly his gly gly ala gly gly ala
 61/21
 gcc ggg ctg tgg gcc gcc gcc gcc ggt gcc aat gcc ggg aac gcc gcc gat gcc aac
 ala gly leu trp gly ala gly gly gly gly gly asn gly gly asn gly ala asp ala asn
 121/41
 atc gtc agc ggt gga gac ggt gcc ctc gcc ggt gcc ggt gcc gga tgg ctc tac
 ile val ser gly gly asp gly gly leu gly gly ala gly gly gly gly gly trp leu tyr
 181/61
 gcc gac gcc ggg gcc gcc gga cac gcc gga caa gcc gca atc gcc ctc gcc gcc gcc gcc
 gly asp gly gly ala gly gly his gly gly gln gly ala ile gly leu gly gly gly ala
 241/81
 gcc gcc gac ggg gcc cag gcc gcc gcc gcc cgc gga ctg tgg ggt act gcc gcc gcc gcc
 gly gly asp gly gly gln gly gly ala gly arg gly leu trp gly thr gly gly ala gly
 301/101
 gga cac gcc ggg caa gcc ggt ggt acc ggg gcc cca ccg ctg ccc ggt cag gca gcc atg
 gly his gly gly gln gly gly gly thr gly gly pro pro leu pro gly gln ala gly met
 361/121
 gcc gcc gcg ggt gcc gcc ggt ggg ctg atc gcc aac gcc ggg gcc gcc gcc gac gcc ggt
 gly ala ala gly gly ala gly gly leu ile gly asn gly gly ala gly gly asp gly gly
 421/141
 gtc gcc gcg tcc gcc ggg gtc gcc gga gta gcc ggt gcc gcc ggg aac gcc atg ctg atc
 val gly ala ser gly gly val ala gly val gly gly ala gly gly asn ala met leu ile
 481/161
 ggg cac gcc gcc gcc gcc gcc gcc gcc gga gac agc agt ttc gct aat gcc gcg gcc gcc
 gly his gly gly ala gly gly ala gly gly asp ser ser phe ala asn gly ala ala gly
 541/181
 gcc gcg gcc ggt gcc gga ggg cac ctc ttc gcc aat gcc ggg tcc gcc gcc cac gcc gga
 gly ala gly gly ala gly gly his leu phe gly asn gly gly ser gly gly his gly gly
 601/201
 gcc gtc acg gcc gcc aac acc ggt atc ggt gcc gcc gcc gcc gtc ggt ggg gac gcc agg
 ala val thr ala gly asn thr gly ile gly gly ala gly val gly gly val gly gly asp ala arg
 661/221
 ctg atc gcc cac ggt gcc gcc gcc ggt gcc gcc ggg gac cgc gcc gga gcc ttg gtt gcc
 leu ile gly his gly gly ala gly gly ala gly gly asp arg ala gly ala leu val gly
 721/241
 cgt gac gcc ggg ccc ggt ggg aac ggg gcc gct gcc gcc cag cta tac gcc aac gcc gcc
 arg asp gly gly pro gly gly asn gly gly ala gly gly gln leu tyr gly asn gly gly
 781/261
 gac gcc gcc ccc gcc acc gcc gga aca ctg cag gcg gcg gtg agc gga ttg gtg acg gct
 asp gly ala pro gly thr gly gly thr leu gln ala ala val ser gly leu val thr ala
 841/281
 ttg ttc ggt gca ccc gcc caa ccc gcc gac acc gcc caa ccc gcc tag ccc cga tca acg
 leu phe gly ala pro gly gln pro gly asp thr gly gln pro gly AMB pro arg ser thr
 901/301
 agg gtt tcg gtg ccg gtc cgg gcc atg gcc atc cgc tga gct gcc gat ctg gac tac gtt
 arg val ser val pro val arg gly met ala ile arg OPA ala gly asp leu asp tyr val
 961/321
 ggt gta gaa aaa tcc tgc cgc ccg gac cct taa gcc tgg gac aat ttc tga tag cta ccc
 gly val glu lys ser cys arg pro asp pro OCH gly trp asp asn phe OPA AMB leu pro
 1021/341
 cga cac agg agg tta cgg gat gag caa ttc gcg ccg ccg ctc act cag gtg gtc atg gtt
 arg his arg arg leu arg asp glu gln phe ala pro pro leu thr gln val val met val
 1081/361
 gct gag cgt gct gcc tgc cgt cgg gct ggg cct gcc cac gcc gcc gcc cca gcc gcc ccc
 ala glu arg ala gly cys arg arg ala gly pro gly his gly ala gly pro gly gly pro
 1141/381
 gcc gcc ctt gtc gca gga ccg gtt
 ala gly leu val ala gly pro val

SEQ ID N° 50C

FIGURE 50C
 FEUILLE DE REMPLACEMENT (REGLE 26)

179/185

Séquence codante Rv0125 prédite par Cole et al., 1998 (Nature 393:537-544) et contenant seq50A:

```

1/1                               31/11
atg agc aat tcg cgc cgc cgc tca ctc agg tgg tca tgg ttg ctg agc gtg ctg gct gcc
Met ser asn ser arg arg arg ser leu arg trp ser trp leu leu ser val leu ala ala
61/21                               91/31
gtc ggg ctg ggc ctg gcc acg gcg ccg gcc cag gcg gcc ccg ccg gcc ttg tcg cag gac
val gly leu gly leu ala thr ala pro ala gln ala ala pro pro ala leu ser gln asp
121/41                               151/51
cgg ttc gcc gac ttc ccc gcg ctg ccc ctc gac ccg tcc gcg atg gtc gcc caa gtg ggg
arg phe ala asp phe pro ala leu pro leu asp pro ser ala met val ala gln val gly
181/61                               211/71
cca cag gtg gtc aac atc aac acc aaa ctg ggc tac aac aac gcc gtg ggc gcc ggg acc
pro gln val val asn ile asn thr lys leu gly tyr asn asn ala val gly ala gly thr
241/81                               271/91
ggc atc gtc atc gat ccc aac ggt gtc gtg ctg acc aac aac cac gtg atc gcg ggc gcc
gly ile val ile asp pro asn gly val val leu thr asn asn his val ile ala gly ala
301/101                               331/111
acc gac atc aat gcg ttc agc gtc ggc tcc ggc caa acc tac ggc gtc gat gtg gtc ggg
thr asp ile asn ala phe ser val gly ser gly gln thr tyr gly val asp val val gly
361/121                               391/131
tat gac cgc acc cag gat gtc gcg gtg ctg cag ctg cgc ggt gcc ggt ggc ctg ccg tcg
tyr asp arg thr gln asp val ala val leu gln leu arg gly ala gly gly leu pro ser
421/141                               451/151
gcg gcg atc ggt ggc ggc gtc gcg gtt ggt gag ccc gtc gtc gcg atg ggc aac agc ggt
ala ala ile gly gly gly val ala val gly glu pro val val ala met gly asn ser gly
481/161                               511/171
ggg cag ggc gga acg ccc cgt gcg gtg cct ggc agg gtg gtc gcg ctc ggc caa acc gtg
gly gln gly gly thr pro arg ala val pro gly arg val val ala leu gly gln thr val
541/181                               571/191
cag gcg tcg gat tcg ctg acc ggt gcc gaa gag aca ttg aac ggg ttg atc cag ttc gat
gln ala ser asp ser leu thr gly ala glu glu thr leu asn gly leu ile gln phe asp
601/201                               631/211
gcc gcg atc cag ccc ggt gat tcg ggc ggc ccc gtc gtc aac ggc cta gga cag gtg gtc
ala ala ile gln pro gly asp ser gly gly pro val val asn gly leu gly gln val val
661/221                               691/231
ggt atg aac acg gcc gcg tcc gat aac ttc cag ctg tcc cag ggt ggg cag gga ttc gcc
gly met asn thr ala ala ser asp asn phe gln leu ser gln gly gly gln gly phe ala
721/241                               751/251
att ccg atc ggg cag gcg atg gcg atc gcg ggc cag atc cga tcg ggt ggg ggg tca ccc
ile pro ile gly gln ala met ala ile ala gly gln ile arg ser gly gly gly ser pro
781/261                               811/271
acc gtt cat atc ggg cct acc gcc ttc ctc ggc ttg ggt gtt gtc gac aac aac ggc aac
thr val his ile gly pro thr ala phe leu gly leu gly val val asp asn asn gly asn
841/281                               871/291
ggc gca cga gtc caa cgc gtg gtc ggg agc gct ccg gcg gca agt ctc ggc atc tcc acc
gly ala arg val gln arg val val gly ser ala pro ala ala ser leu gly ile ser thr
901/301                               931/311
ggc gac gtg atc acc gcg gtc gac ggc gct ccg atc aac tcg gcc acc gcg atg gcg gac
gly asp val ile thr ala val asp gly ala pro ile asn ser ala thr ala met ala asp
961/321                               991/331
gcg ctt aac ggg cat cat ccc ggt gac gtc atc tcg gtg acc tgg caa acc aag tcg ggc
ala leu asn gly his his pro gly asp val ile ser val thr trp gln thr lys ser gly
1021/341                               1051/351
ggc acg cgt aca ggg aac gtg aca ttg gcc gag gga ccc ccg gcc tga
gly thr arg thr gly asn val thr leu ala glu gly pro pro ala OPA

```

SEQ ID N° 50D

FEUILLE DE REMPLACEMENT (REGLE 26)

180/185

ORF d'après Cole et al., 1998 (Nature 393:537-544) et contenant RV0125:

1/1 31/11
tag aaa aat cct gcc gcc cgg acc ctt aag gct ggg aca att tct gat agc tac ccc gac
AMB lys asn pro ala ala arg thr leu lys ala gly thr ile ser asp ser tyr pro asp
61/21 91/31
aca gga ggt tac ggg atg agc aat tcg cgc cgc cgc tca ctc agg tgg tca tgg ttg ctg
thr gly gly tyr gly met ser asn ser arg arg arg ser leu arg trp ser trp leu leu
121/41 151/51
agc gtg cgg gct gcc gtc ggg ctg ggc ctg gcc acg gcg ccg gcc cag gcg gcc ccg ccg
ser val leu ala ala val gly leu gly leu ala thr ala pro ala gln ala ala pro pro
181/51 211/71
gcc ttg tcg cag gac cgg ttc gcc gac ttc ccc gcg ctg ccc ctc gac ccg tcc gcg atg
ala leu ser gln asp arg phe ala asp phe pro ala leu pro leu asp pro ser ala met
241/81 271/91
gtc gcc caa gtg ggg cca cag gtg gtc aac atc aac acc aaa ctg ggc tac aac aac gcc
val ala gln val gly pro gln val val asn ile asn thr lys leu gly tyr asn asn ala
301/101 331/111
gtg gcc gcc ggg acc ggc atc gtc atc gat ccc aac ggt gtc gtg ctg acc aac aac cac
val gly ala gly thr gly ile val ile asp pro asn gly val val leu thr asn asn his
361/121 391/131
gtg atc gcg gcc gcc acc gac atc aat gcg ttc agc gtc ggc tcc gcc caa acc tac gcc
val ile ala gly ala thr asp ile asn ala phe ser val gly ser gly gln thr tyr gly
421/141 451/151
gtc gat gtg gtc ggg tat gac cgc acc cag gat gtc gcg gtg ctg cag ctg cgc ggt gcc
val asp val val gly tyr asp arg thr gln asp val ala val leu gln leu arg gly ala
481/161 511/171
ggt gcc ctg ccg tcg gcg gcg atc ggt gcc gcc gtc gcg gtt ggt gag ccc gtc gtc gcg
gly gly leu pro ser ala ala ile gly gly gly val ala val gly glu pro val val ala
541/181 571/191
atg gcc aac agc ggt ggg cag gcc gga acg ccc cgt gcg gtg cct gcc agg gtg gtc gcg
met gly asn ser gly gly gln gly gly thr pro arg ala val pro gly arg val val ala
601/201 631/211
ctc gcc caa acc gtg cag gcg tcg gat tcg ctg acc ggt gcc gaa gag aca ttg aac ggg
leu gly gln thr val gln ala ser asp ser leu thr gly ala glu glu thr leu asn gly
661/221 691/231
ttg atc cag ttc gat gcc gcg atc cag ccc ggt gat tcg gcc ggg ccc gtc gtc aac gcc
leu ile gln phe asp ala ala ile gln pro gly asp ser gly gly pro val val asn gly
721/241 751/251
cta gga cag gtg gtc ggt atg aac acg gcc gcg tcc gat aac ttc cag ctg tcc cag ggt
leu gly gln val val gly met asn thr ala ala ser asp asn phe gln leu ser gln gly
781/261 811/271
ggg cag gga ttc gcc att ccg atc ggg cag gcg atg gcg atc gcg gcc cag atc cga tcg
gly gln gly phe ala ile pro ile gly gln ala met ala ile ala gly gln ile arg ser
841/281 871/291
ggt ggg ggg tca ccc acc gtt cat atc ggg cct acc gcc ttc ctc gcc ttg ggt gtt gtc
gly gly gly ser pro thr val his ile gly pro thr ala phe leu gly leu gly val val
901/301 931/311
gac aac aac gcc aac gcc gca cga gtc caa cgc gtg gtc ggg agc gct ccg gcg gca agt
asp asn asn gly asn gly ala arg val gln arg val val gly ser ala pro ala ala ser
961/321 991/331
ctc gcc atc tcc acc gcc gac gtg atc acc gcg gtc gac gcc gct ccg atc aac tcg gcc
leu gly ile ser thr gly asp val ile thr ala val asp gly ala pro ile asn ser ala
1021/341 1051/351
acc gcg atg gcg gac gcg ctt aac ggg cat cat ccc ggt gac gtc atc tcg gtg acc tgg
thr ala met ala asp ala leu asn gly his his pro gly asp val ile ser val thr trp
1081/361 1111/371
caa acc aag tcg gcc gcc acg cgt aca ggg aac gtg aca ttg gcc gag gga ccc ccg gcc
gln thr lys ser gly gly thr arg thr gly asn val thr leu ala glu gly pro pro ala
1141/381
tga
OPA

SEQ ID N° 50F

FEUILLE DE REMPLACEMENT (REGLE 26)

181/185

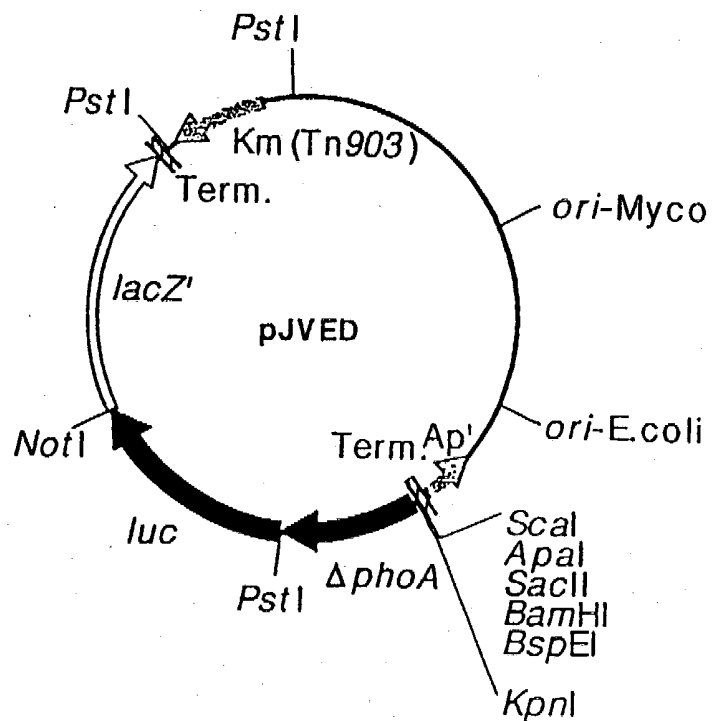


FIGURE 51A

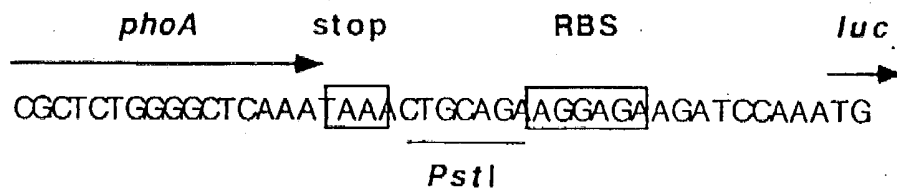
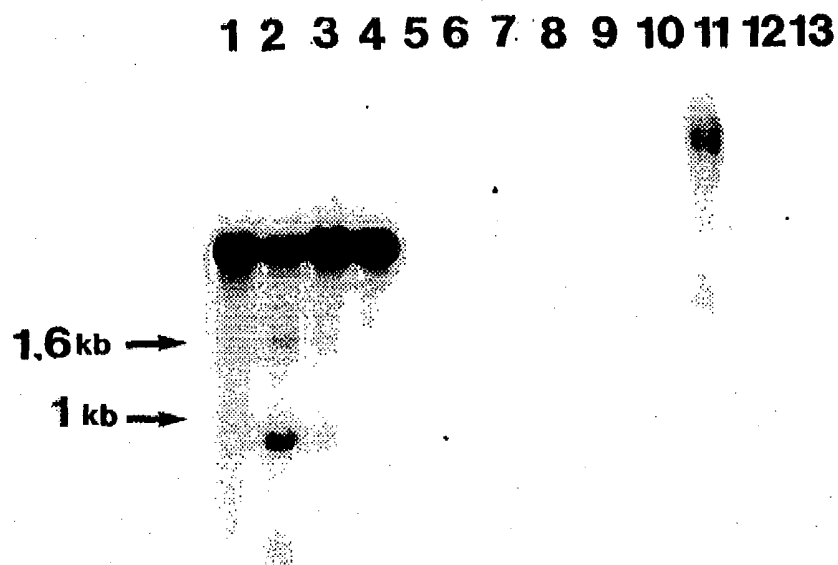


FIGURE 51B

182/185

Expériences d'hybridation moléculaire d'une sonde spécifique
du DP428 sur l'ADN génomique de différentes espèces de
mycobactéries



1: *M. tuberculosis* 2: *M. bovis* 3: BCG 4: *M. africanum* 5: cancelled 6: *M. fortuitum* 7: *M. simiae* 8: *M. avium* 9: *M. chelonae* 10: *M. flavescens* 11: *M. gordonae* 12: *M. marinum* 13: *M. kansasii*

FIGURE 52
FEUILLE DE REMPLACEMENT (REGLE 26)

183/185

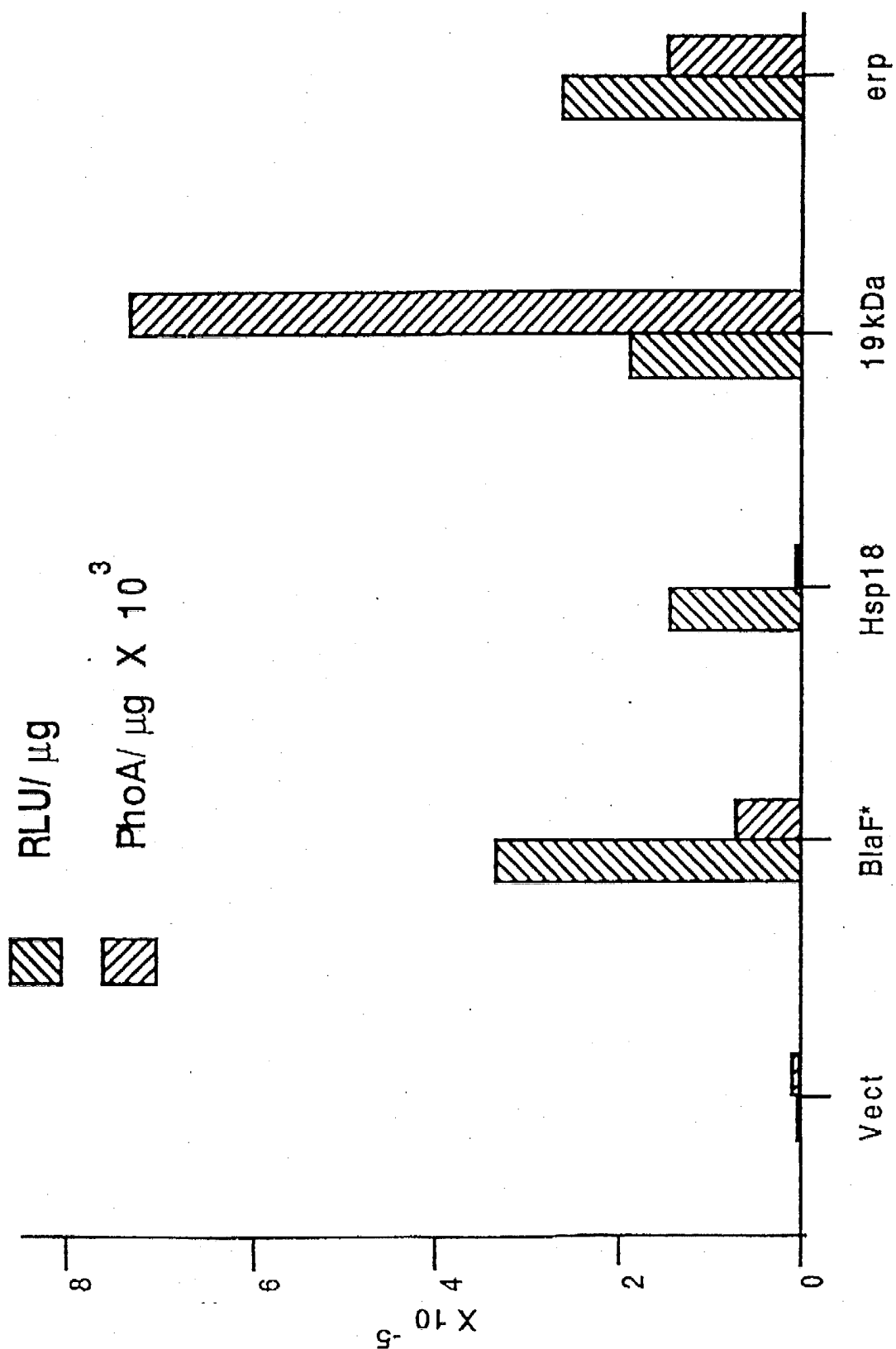


FIGURE 53

184/185

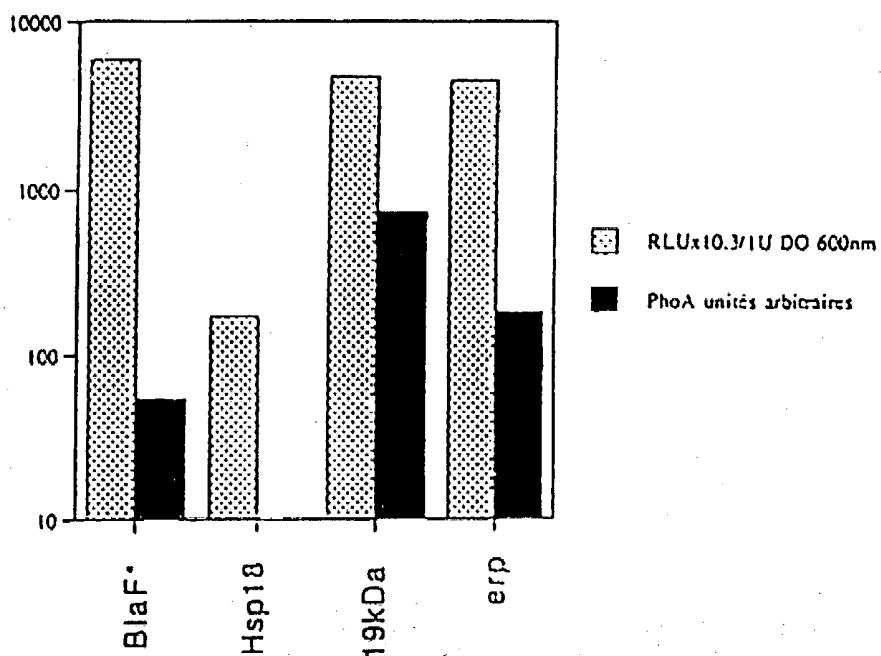
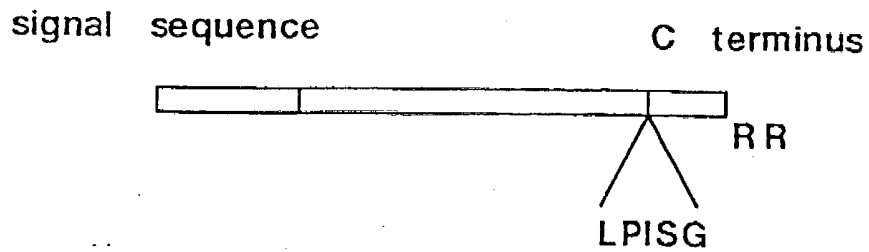
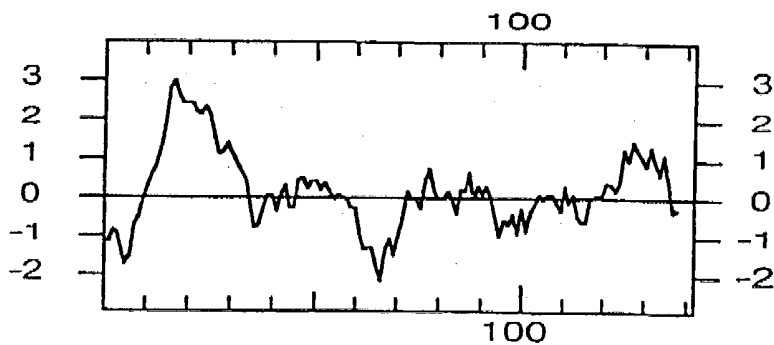


FIGURE 54



185/185

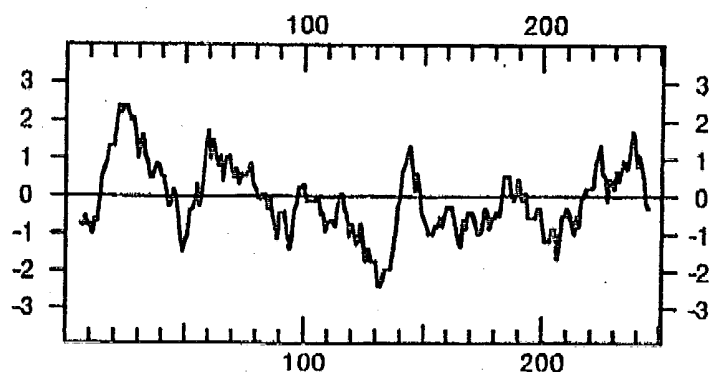


FIGURE 56



FIGURE 57A



FIGURE 57B